

**Final Bremerton Gasworks
Targeted Brownfields Assessment
Report
Bremerton, Washington**

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Table of Contents

Section	Page
1	Introduction 1-1
2	Site Description 2-1
2.1	Location and Description 2-1
2.2	Local Conditions 2-2
2.3	Previous Investigations 2-2
3	Investigation and Results 3-1
3.1	Sampling design 3-1
3.2	Sampling Methods 3-1
3.3	Regulatory Standards 3-3
3.3.1	Washington State Department of Ecology Model Toxics Control Act 3-3
3.3.2	EPA Regional Risk-Based Screening Levels 3-4
3.3.3	Groundwater Screening Concentrations 3-4
3.3.4	Washington State Marine Sediment Management Standards 3-5
3.3.5	National Oceanic and Atmospheric Administration Screening Quick Reference Tables 3-5
3.4	Sampling Results 3-6
3.4.1	North McConkey Property 3-6
3.4.2	Sesko Property 3-7
3.4.3	Washington Narrows 3-8
4	Cleanup Options and Cost Estimate 4-1
5	Conclusions 5-1
6	References 6-1

Table of Contents (cont.)

Section	Page
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LIST OF APPENDICES

A	Photographic Documentation	A-1
B	Screening Criteria and Analytical Results	B-1
C	Sample Plan Alteration Form	C-1
D	Global Positioning System Coordinates	D-1
E	Borehole Reports	E-1
F	Quality Assurance/Quality Control and Data Validation Memoranda	F-1
G	RACER Cleanup Option Cost Estimates	G-1

List of Tables

Table		Page
4-1	Cleanup Estimate Option and Rationale	4-5
4-2	Preliminary Cost Estimate for Cleanup Action	4-6
B-1	Soil Sample Screening Criteria.....	B-2
B-2	Groundwater Sample Screening Criteria	B-5
B-3	Sediment Sample Screening Criteria	B-8
B-4	Subsurface Soil Samples (0 to 5 feet bgs) Analytical Results Summary	B-10
B-5	Subsurface Soil Samples (5 to 10 feet bgs) Analytical Results Summary	B-12
B-6	Subsurface Soil Samples (10 to 15 feet bgs) Analytical Results Summary	B-14
B-7	Subsurface Soil Samples (15 to 20 feet bgs) Analytical Results Summary	B-16
B-8	Subsurface Soil Samples (20 to 25 feet bgs) Analytical Results Summary	B-18
B-9	Subsurface Soil Samples (25 to 30 feet bgs) Analytical Results Summary	B-20
B-10	Subsurface Soil Samples (30 to 35 feet bgs) Analytical Results Summary	B-21
B-11	Subsurface Soil Samples (35 to 40 feet bgs) Analytical Results Summary	B-22
B-12	Subsurface Soil Samples (40 to 45 feet bgs) Analytical Results Summary	B-24
B-13	Groundwater Samples Analytical Results Summary	B-25
B-14	Sediment Samples Analytical Results Summary	B-27

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List of Figures

Figure		Page
2-1	Site Vicinity Map.....	2-4
2-2	Site Map.....	2-5
3-1	Sample Location Map.....	3-9
3-2	Subsurface soil contaminant (0-5 bgs) concentration map.....	3-11
3-3	Subsurface soil contaminant (5-10 bgs) concentration map.....	3-12
3-4	Subsurface soil contaminant (10-15 bgs) concentration map.....	3-13
3-5	Subsurface soil contaminant (15-20 bgs) concentration map.....	3-14
3-6	Subsurface soil contaminant (20-25 bgs) concentration map.....	3-15
3-7	Subsurface soil contaminant (25-30 bgs) concentration map.....	3-16
3-8	Subsurface soil contaminant (30-35 bgs) concentration map.....	3-17
3-9	Subsurface soil contaminant (35-40 bgs) concentration map.....	3-18
3-10	Subsurface soil contaminant (40-45 bgs) concentration map.....	3-19
3-11	Groundwater contaminant concentration map.....	3-20
3-12	Sediment contaminant concentration map.....	3-21

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List of Abbreviations and Acronyms

<u>Acronym</u>	<u>Definition</u>
AET	Apparent Effects Threshold
ARCO	Atlantic Richfield Company
AST	Aboveground storage tank
BAPE	Benzo(a)pyrene Equivalency
bgs	below ground surface
CLP	Contract Laboratory Program
E & E	Ecology and Environment, Inc.
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
GPS	Global Positioning System
MCL	Maximum Contaminant Levels
mg/kg	milligram per kilogram
MTCA	Model Toxics Control Act
MW	Monitoring Well
NOAA	National Oceanic and Atmospheric Administration
PAHs	Polycyclic Aromatic Hydrocarbons
QA	Quality Assurance
QC	Quality Control
RACER [®]	Remedial Action Cost Engineering and Requirements program
RSLs	EPA Regional Screening Levels
SMS	Sediment Management Standards
SQAP	Sample Quality Assurance Plan
SQS	Sediment Quality Standards
SQuiRT	Screening Quick Reference Tables
START	Superfund Technical Assistance and Response Team
SVOC	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TBA	Targeted Brownfields Assessment
TEF	Toxicity Equivalency Factor
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound
WAC	Washington Administrative Code

1

Introduction

Pursuant to the United States Environmental Protection Agency, (EPA) Region 10, Superfund Technical Assessment and Response Team (START) Contract Number EP-S7-06-02 and Technical Direction Document Number 07-01-0008, Ecology and Environment, Inc. (E & E) performed a Targeted Brownfields Assessment (TBA) at the Bremerton Gasworks site, which is located in Bremerton, Washington. The EPA's Brownfields Economic Redevelopment Initiative is designed to empower states, cities, tribes, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse Brownfields sites (EPA 2002a).

The Bremerton Gasworks site consists of two adjacent properties, the McConkey and the Sesko, zoned for commercial use. This area is planned to be developed into a multipurpose commercial marine area. The multipurpose area would encompass a public access marina, commercial businesses, and potential condominium housing.

This TBA report provides limited sampling data for the Bremerton Gasworks site. The areas that were sampled consist of subsurface soils found under the asphalt-covered former gasworks facilities, subsurface soils near the former aboveground storage tank (AST) areas, and sediment along the Washington Narrows. These locations were selected based on analytical results from a previous investigation conducted under a Brownfields Assessment grant to the City of Bremerton.

The objective of this TBA is to present the results of the limited sampling for preliminary site characterization purposes. This report is organized as follows:

- Section 1 (Introduction): authority for performance of this work and summary of report contents;
- Section 2 (Site Description): description of site conditions, history, and site concerns;
- Section 3 (Investigation and Results): summary of the field effort and chemicals detected at the site and a comparison of detected chemical concentrations to analyte-specific screening criteria;
- Section 4 (Cleanup Options and Cost Estimate): cleanup options for the site based on sample results and analyte-specific screening criteria;
- Section 5 (Conclusions and Recommendations): recommendation for the site based on the information gathered during this investigation;
- Section 6 (References): list of references cited throughout the text;



- Appendix A Photographic Documentation: photographs taken during the initial site visit and during the sampling event;
- Appendix B Screening Criteria and Analytical Results: tables presenting the analyte-specific screening criteria selected and the analytical results summary tables for samples collected;
- Appendix C Sample Plan Alteration Forms: description and justification for deviations from the approved sampling plan;
- Appendix D Global Positioning System Coordinates: a list of all sample location coordinates;
- Appendix E Borehole Reports: completed borehole reports for each borehole location;
- Appendix F Quality Assurance/Quality Control and Data Validation Memoranda: a summary of Quality Assurance/Quality Control (QA/QC) information and data validation memoranda for all samples collected during the investigation; and
- Appendix G RACER Cleanup Option Cost Estimates: a comprehensive cost estimate for each Section 4 cleanup option.

2

Site Description

2.1 Location and Description

The site is located at 1725 Pennsylvania Avenue, approximately 1 mile north by northwest of downtown Bremerton (Figure 2-1) (Geoengineers 2007). The Bremerton Gasworks site is located on two adjacent properties covering approximately 3.68 acres in the city of Bremerton, Kitsap County, Washington. The site is composed of tax parcel numbers 3711-000-001-0409 and 3711-00-001-0607 (McConkey parcels) and tax parcel number 3711-000-022-0101 (Sesko parcel) (TechLaw 2006).

The site is situated in mixed use commercial, industrial, and residential areas. It is bordered by the Washington Narrows waterway to the north, South McConkey Industrial Park to the south, Thompson Avenue to the west, and Pennsylvania Avenue to the east (Figure 2-2).

The site was originally developed by the Western Gas and Utilities Corporation to provide the city of Bremerton with light, heat, and electricity by natural gas products. The gasification plant was in operation from approximately 1930 to 1956. The plant was fueled by shipments of coal delivered by boat. The gasification process may have started by processing the coal with high temperature and pressure, using boiler plant steam and measured amounts of oxygen. The final product (coal or natural gas) was sent by pipeline to local residences in Bremerton. This site also was utilized for petroleum storage and distribution from approximately 1963 to 1985. Petroleum products were stored in ASTs and distributed by underground pipeline or offloaded to vehicles. The records are not clear regarding how many of the underground fuel distribution lines were removed, if the distribution lines remain underground, or if product remains in the lines. Aerial photographs suggest that the former gasification physical plant, boiler, and ASTs apparently were removed between 1985 and 1993 (TechLaw 2006).

The McConkey properties cover approximately 3.13 acres (TechLaw 2006). These properties are operated by Trip McConkey as a mixed use commercial property and storage rental business (E & E 2007). They currently contain five separate buildings, which are leased to a metal fabrication shop, piston ring shop, granite countertop workshop, and a welding shop (TechLaw 2006). Past commercial uses include sheet metal fabrication, drum storage facilities, automotive and marine repair, metal salvage yard, painting/sandblasting activities, and petroleum bulk storage and distribution.



2. Site Description

The Sesko property covers approximately 0.55 acres (TechLaw 2006). This property is owned by Natasha Sesko. It is currently vacant but appears to be used as temporary storage for heavy equipment. The only structures on this property are the former foundations of the AST farm (TechLaw 2006). The Sesko property was formerly utilized as a commercial AST and petroleum distribution facility (Techlaw 2006).

A bulk petroleum storage facility (ARCO, now owned by BP West Coast Products LLC) was previously located northwest of the McConkey properties. Currently, SC Fuels, a petroleum bulk storage facility, is located east of the Sesko property and Pennsylvania Avenue. Historical files for the SC Fuels facility indicate that petroleum releases have occurred (Ecology 2009).

2.2 Local Conditions

The nearest surface water to the subject property is the Washington Narrows, which is located 100 to 150 feet north of the site. The Washington Narrows is affected by tidal variation from Puget Sound.

Groundwater is located at depths ranging from 15 to 45 feet below ground surface (bgs). It is not clear if shallow groundwater at the site is influenced by tidal variations from the Washington Narrows. Groundwater follows a slight north-northwest gradient towards the Washington Narrows (Geoengineers 2007).

A drainage pipe was discovered down gradient from the Sesko property on the Washington Narrows beachfront (Appendix A; Photograph 0717). It is not clear where the pipe originated or what its intended use was.

2.3 Previous Investigations

In October 2006, the City of Bremerton received a Brownfields Assessment grant from EPA Region 10. This grant awarded \$200,000 for additional site assessment work. The City of Bremerton proposed to redevelop a portion of the Bremerton Gasworks site as a public access marina.

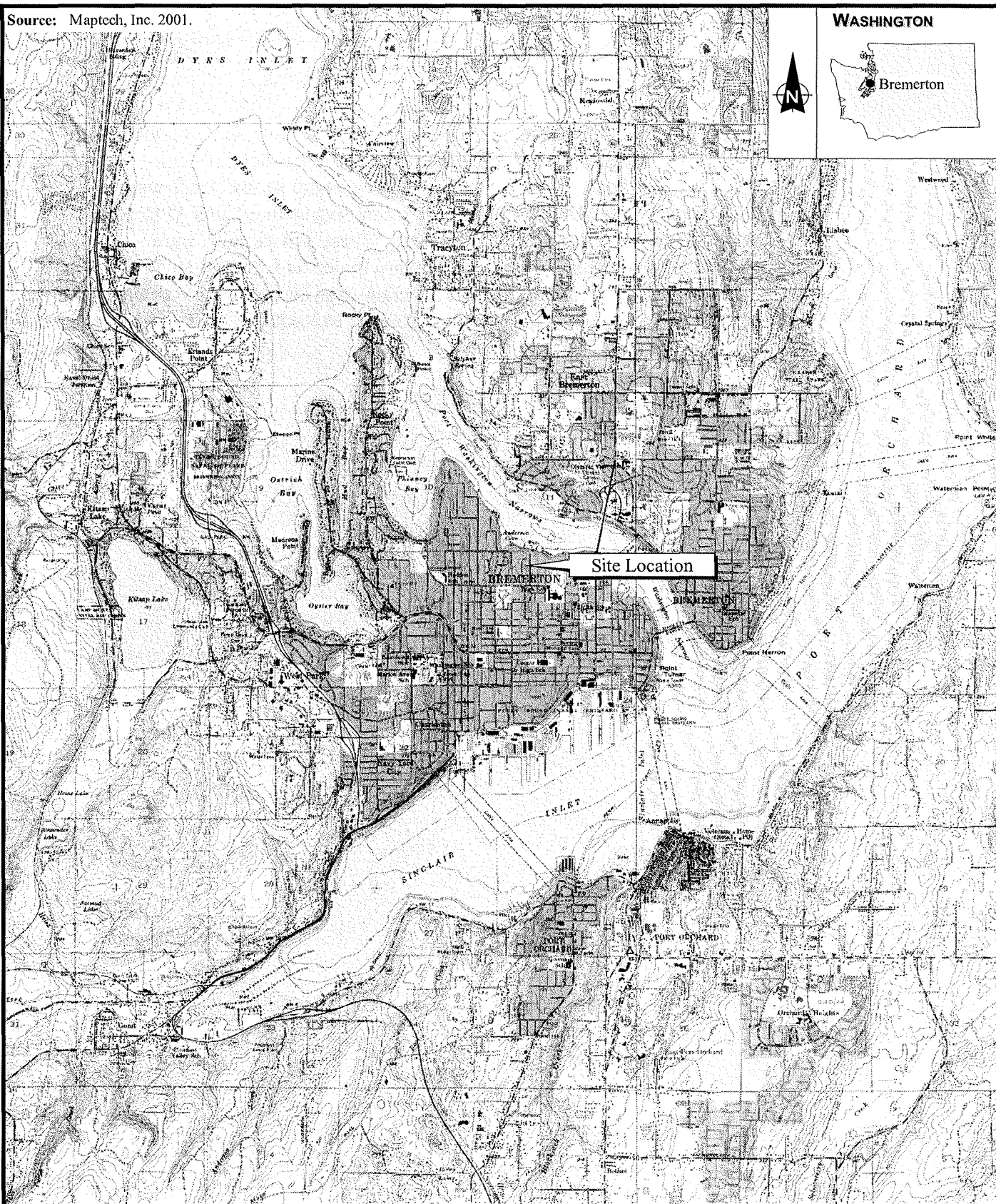
The City of Bremerton contracted Geoengineers, Inc., to conduct subsurface soil sampling and monitoring well installation at eight locations. Monitoring well (MW)-1 through MW-8 were installed on May 21 through May 24, 2007. The soil borings and monitoring wells were advanced to depths ranging from 20 to 45 feet bgs. Soil samples were collected from the surface, at 5-foot intervals for each borehole. The samples were field screened for physical evidence of contamination and, based on visual observation, a minimum of two samples per borehole were submitted for laboratory analysis to TestAmerica Laboratories of Bothell, Washington. Samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, TPH as heavy oils, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls, and Target Analyte List (TAL) metals. Groundwater was encountered at depths ranging from 15 to 35 feet bgs, utilizing low flow sampling techniques.



2. Site Description

Geoengineers discovered contamination in subsurface soils and groundwater at the site that exceeded the 2007 Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) cleanup levels. Soils were impacted with VOCs, PAHs, TAL metals (including arsenic), and TPH as gasoline, diesel, and oil range hydrocarbons. These soil samples were contaminated from the soil surface downward to depths greater than 30 feet bgs. Levels of VOCs, PAHs, SVOCs, heavy metals, total chromium, hexavalent chromium, and arsenic found in the groundwater exceeded MTCA screening levels (Geoengineers 2007).

Source: Maptech, Inc. 2001.



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BREMERTON GASWORKS TBA
Bremerton, Washington

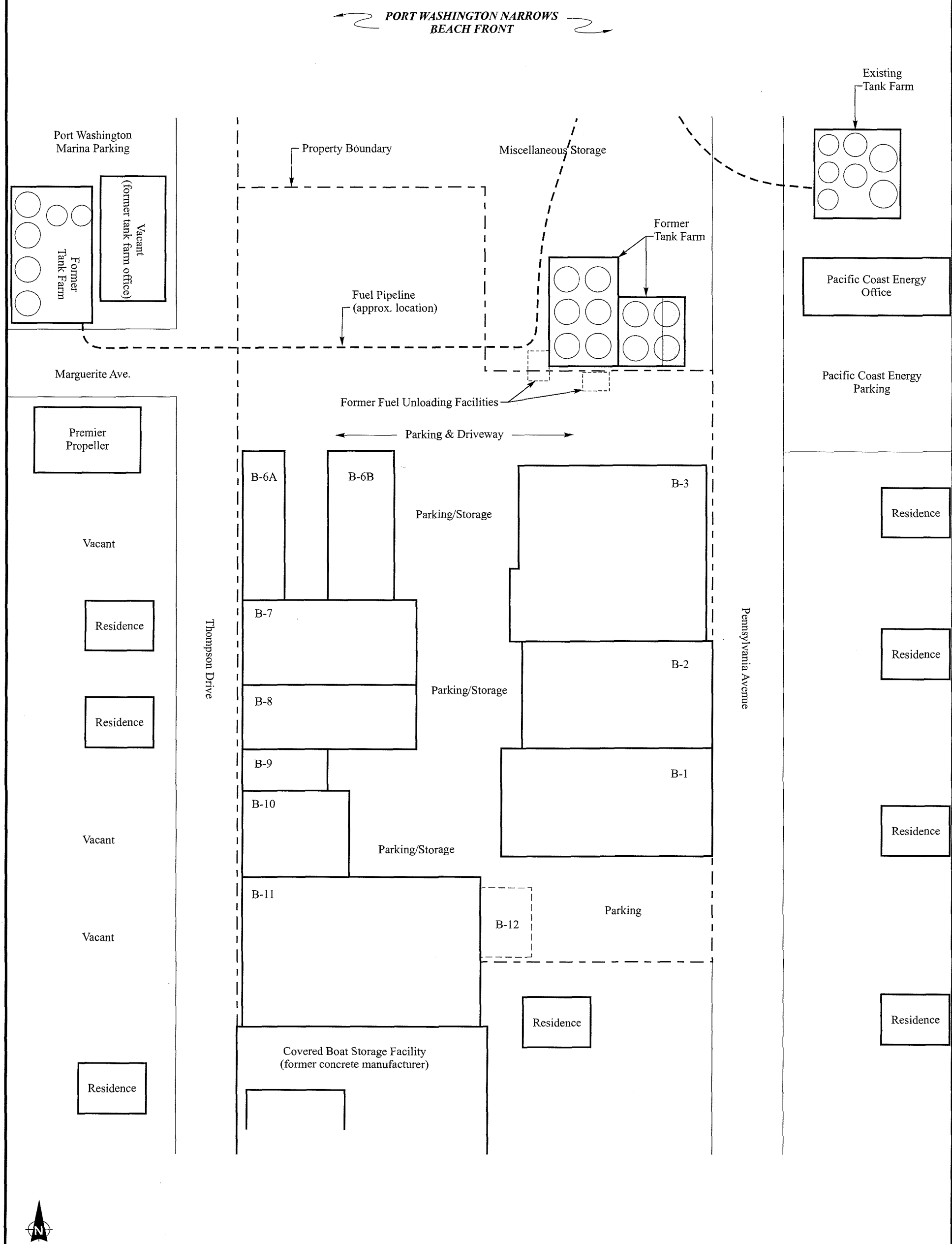
0 .5 1
Approximate Scale in Miles

Figure 2-1
SITE VICINITY MAP

Date:
11-25-08

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AES

10:START-3\07010008\fig 2-1



3

Investigation and Results

E & E conducted a field sampling event at the Bremerton Gasworks site from May 12 through May 15 and on May 19 and June 4, 2008. Field work was conducted in cooperation with the City of Bremerton.

3.1 Sampling design

A judgmental sampling design was used for the Bremerton Gasworks TBA. This sampling design fulfills specific project objectives by collecting biased data required for preliminary site characterization. The following subsections describe the types of sampling, analysis, and measurements that were conducted. Samples were collected in accordance with an approved Sampling and Quality Assurance Plan (SQAP) (E & E 2008b). Deviations from the SQAP are described below, as well as in the Sample Plan Alteration Form provided in Appendix C.

Although general sample locations (i.e., features to sample) were selected prior to mobilization, the exact locations were selected once the field sampling crew was on site. Locations were selected to maximize the possibility of discovering areas of potential contamination. Photographic documentation of the samples, sampling locations, and site features are provided in Appendix A. A summary of sample coordinates obtained via GPS units with data loggers is provided in Appendix D.

To evaluate the presence or absence of contamination at various areas at the site, 65 samples were collected. These include QA/QC samples and waste profile samples collected from soil cuttings and well development wastewater. Sample locations are depicted in Figure 3-1.

The following areas were sampled:

- North McConkey property (26 samples from 4 locations),
- Sesko property (22 samples from 3 locations), and
- Washington Narrows beachfront (5 samples from 5 locations).

3.2 Sampling Methods

Subsurface soil samples were collected by driving a hollow-stem auger drill rig to the designated depth, then transferring the sample material into a dedicated stainless steel bowl using a dedicated stainless steel spoon. The sample material was thoroughly homogenized and placed in pre-labeled sample containers. The VOC aliquots were collected with Core-N-One soil samplers prior to sample homogenization.

3. Investigation and Results

The auger head was decontaminated between sample locations. Three rinsate samples (RS01WT, RS02WT, and RS03WT) were collected to ensure that decontaminated procedures were sufficient to meet the SQAP guidelines.

After sample collection, the drill borehole were either modified into a groundwater monitoring well or abandoned according to all applicable Washington State standards. Two monitoring wells (MP04 and SP02) were installed and developed for future groundwater monitoring. A copy of the borehole reports are provided in Appendix E.

Two monitoring wells were installed using a hollow-stem auger rig in accordance with the Washington State Department of Ecology Minimum Standards for Construction and Maintenance of Wells ([173-160 WAC]). Well casings and screens were constructed of 2-inch diameter, schedule 40 PVC. Ten-foot long, 0.010-inch slotted pre-packed well screens were used during well installation. The wells were developed using a surge block and a submersible pump.

The two monitoring wells were sampled using a Grunfos submersible pump and low flow sampling techniques. Dedicated polyethylene tubing was used for each well, and a Horiba U-10 water quality meter was used to measure water quality parameters. Water quality parameters (i.e., pH, temperature, redox potential, dissolved oxygen, conductivity, and turbidity) were monitored and recorded during purging. Purging continued until water quality parameters stabilized, indicating that groundwater representative of the aquifer formation was present in the well. Stabilization requirements are three consecutive readings, taken at approximately 5-minute intervals, within the following criteria: pH (± 0.1 unit), specific conductance ($\pm 3\%$), and Dissolved Oxygen ($\pm 10\%$). Groundwater samples were then collected using a submersible Grunfos pump discharging directly into pre-labeled sample containers. Samples were preserved as required after sample collection, with the exception of the VOC aliquot, which was collected in pre-preserved sample containers.

All samples were submitted to an off-site fixed laboratory for VOC, SVOC, TAL Metals, TPH-Gx, and TPH-Dx analysis. QA/QC validation memoranda are provided in Appendix F. The following samples were submitted to a contract laboratory program (CLP) and EPA Manchester Environmental Laboratory for analysis as follows:

- **VOCs** - 65 samples, including QA/QC samples, were submitted for SVOC analysis using EPA Method SOM01.2. The samples were submitted to KAP Technologies Laboratory in The Woodlands, Texas, a CLP laboratory.
- **SVOCs** - 58 samples, including QA/QC samples, were submitted for SVOC analysis using EPA Method SOM01.2. The samples were submitted to KAP Technologies Laboratory in The Woodlands, Texas, a CLP laboratory.
- **TAL Metals** - 59 samples, including QA/QC samples, were submitted for TAL metals analysis using EPA Method ILM05.4. The samples were

submitted to Bonner Analytical Testing Company of Hattiesburg, Mississippi, a CLP laboratory.

- **TPH-Gx/Dx** - 59 samples, including QA/QC samples, were submitted for TPH analysis using EPA Method NWTPH-Gx/Dx. The samples were submitted to Manchester Environmental Laboratory of Manchester, Washington.

3.3 Regulatory Standards

Both the MTCA screening levels (Ecology 2008) and EPA Risk Based Regional Screening Levels (RSLs) (EPA 2009) were used to evaluate soil results for this TBA as conservative screening levels to assess whether contaminant concentrations pose a potential threat to human health and the environment under a variety of exposure conditions. RSLs are used preferentially for evaluation purposes to allow for maximum beneficial use of the site. Additionally, the EPA RSLs and Federal Maximum Contaminant levels (MCLs) are used to evaluate the groundwater encountered at the site. Finally, the newly promulgated Washington State Department of Ecology Marine Sediment Management Standards (SMS) are used to evaluate sediment samples collected from the Washington Narrows.

A description of the screening values and applicable use is included below. Available screening concentrations are presented in Tables B-1 (soil), B-2 (groundwater), and B-3 (sediment). The chosen screening concentration for each analyte is presented in the last column of these tables.

3.3.1 Washington State Department of Ecology Model Toxics Control Act

MTCA levels are determined according to three categories: Methods A, B, and C. Method A levels are generally the most conservative, may or may not be risk-based, and are intended for use at simple sites with limited numbers of contaminants. Method A values are available for residential soil and industrial soil uses. Method B levels are based on residential land use. Method B soil screening levels assume high frequency of contact in a residential setting. Method B screening levels account for exposure to children and correspond to a 1 in 1,000,000 excess lifetime cancer risk for carcinogens or a hazard quotient of 1 for noncarcinogens.

A hazard quotient is a ratio between the level to which someone may be exposed to a contaminant in the environment and a level deemed “safe” by regulatory agencies. This “safe” exposure level is usually referred to as a reference dose or reference concentration. Method C levels are based on commercial or industrial land use; therefore, soil screening levels are based on adult contact only. The risk levels for Method C are an excess lifetime cancer risk of 1 in 100,000 for carcinogens and a hazard quotient of 1 for noncarcinogens.

Under Washington State’s MTCA (Washington Administrative Code [WAC] 173-340-708(8)(e)), mixtures of carcinogenic PAHs must be evaluated as a single hazardous substance by using the toxicity equivalency factor (TEF) methodology

(Ecology 2007). A TEF is an estimate of a chemical's toxicity relative to a reference chemical; benzo(a)pyrene is the reference chemical for carcinogenic PAHs. In this report, concentrations of carcinogenic PAHs were multiplied by chemical-specific TEFs, and then the products were summed to obtain a total equivalent concentration of benzo(a)pyrene, or benzo(a)pyrene equivalency (BAPE). This sum then was compared to the MTCA cleanup level for benzo(a)pyrene. TEFs for the seven PAHs classified as Group A (known human) or Group B (probable human) carcinogens by the EPA are provided by Ecology (Ecology 2007).

The planned end use for this site includes a public access marina, commercial businesses, and potential condominium housing. Therefore, MTCA Method A unrestricted values will be employed where they are available.

3.3.2 EPA Regional Risk-Based Screening Levels

The EPA's regional RSLs for residential soil supersede the EPA Region 3 RBC Table, Region 6 HHMSSL Table, and the Region 9 PRG Table. RSLs are calculated using up-to-date toxicity values, default exposure assumptions, and default physical and chemical parameters and are not intended to be used as cleanup levels. The RSLs represent reasonable maximum exposure conditions, as defined by EPA risk assessment guidance (EPA 1991) and soil screening level guidance (EPA 1996a, 1996b, 2002b), and assume a resident at the site contacts soil via incidental ingestion, direct dermal contact, and inhalation of wind-blown soil particulates. The RSLs are maintained by the United States Department of Energy's Oak Ridge National Laboratory and are updated as new toxicity values, chemical-specific parameters, and EPA guidance become available.

3.3.3 Groundwater Screening Concentrations

Groundwater screening levels in Appendix B Table B-2 include the MTCA Method A screening levels, Washington State and federal MCLs, and EPA RSLs for groundwater. All groundwater values presented in Table B-2 assume that groundwater is currently used as drinking water or could reasonably be used as a drinking water source in the future. The MTCA Method A groundwater screening standards were established under WAC 173-340-740 (2). Under chapter 246-290-310 WAC, Washington State has identified MCLs for chemicals in drinking water. Washington State MCLs consist of primary and secondary chemical and physical parameters and are intended to ensure safe public drinking water resources. State MCLs are at least as stringent as federal drinking water standards, or MCLs, that are part of the Safe Drinking Water Act. Like state MCLs, federal MCLs are legally enforceable standards applicable to public water systems. Primary standards establish limits for chemical contaminants in drinking water and are based on protection of public health or limitations of treatment technologies. Secondary standards are non-enforceable guidelines pertaining to cosmetic or aesthetic parameters (e.g., color, taste, and odor). Table B-2 lists both state and federal MCLs for target analytes relevant to this site.

The EPA's RSLs for tap water are protective of exposures via direct ingestion of tap water and inhalation of volatile chemicals present in tap water. The RSLs are

not protective of exposure to chemicals through dermal contact with water. As with the soil RSLs, the EPA RSLs for tap water are managed by the United States Department of Energy's Oak Ridge National Laboratory and are updated as new toxicity values, chemical-specific parameters, and EPA guidance become available. These tap water standards were utilized when no applicable MTCA, state, or federal MCLs were available. They should be applied if groundwater is utilized as a drinking water source. They should not be considered applicable as a cleanup screening value.

3.3.4 Washington State Marine Sediment Management Standards

SMSs are provided under Chapter 173-204 of the WAC. These standards are intended to reduce adverse effects on biological resources resulting from contaminated sediments. The sediment quality standards (SQS) included in the SMS provide chemical concentration criteria used to identify levels of sediments below which adverse acute or chronic effects on biological resources are not expected to occur.

Table B-3 of this report lists the target analytes, as provided in Table I under chapter 173-204-320 WAC. The SQS values in Table I of the WAC are "normalized" on a total organic carbon (TOC) basis for non-ionic organic compounds such as PAHs, chlorinated benzenes, phthalates, and PCBs, and on a dry weight basis for compounds such as metals and phenols.

To normalize to TOC, the dry weight concentration of a chemical of concern is divided by the fraction representing the percentage of TOC present in the sediment, then adjusted to parts per million. Normalization of compounds such as metals and phenols is unnecessary because laboratory data are provided on a dry weight basis. The TOC content in sediment at the Bremerton Gasworks site was not measured as part of the study; therefore, the concentration of the chemicals of concern at these stations could not be directly compared to the Washington State SQS.

3.3.5 National Oceanic and Atmospheric Administration Screening Quick Reference Tables

The National Oceanic and Atmospheric Administration (NOAA) provides screening levels for chemicals in freshwater and marine sediments, surface water, and surface soil. These values are listed in the Screening Quick Reference Tables (SQuiRT) (Buchman 2008). The SQuiRTs include multiple chemical-specific screening values based on a variety of test methods, target species, and biological endpoints. The tables are intended for screening purposes only and are not to be used as cleanup values. Table B-3 lists apparent effects thresholds (AETs) listed in the SQuiRTs, which are benchmarks based on the relationship between chemical concentrations in sediment and adverse effects observed in benthic communities or toxicity tests. The AET represents the highest observed concentration that does not result in an adverse effect.

3.4 Sampling Results

Sample results are presented in Appendix B. Subsurface soil sample results are presented by depth from the borehole auger in Tables B-4 through B-12. Groundwater sample results are presented in Table B-13. Finally, sediment sample results are presented in Table B-14. Maps depicting concentrations of analytes that exceed their analyte-specific screening criteria are presented in Figures 3-2 through Figure 3-12. The maps are organized by sample depth for subsurface soil samples and by matrix for groundwater and sediment samples. The analyte-specific screening value is presented in the first column of each table for comparison purposes. Data validation memoranda are provided in Appendix F. Analytical results were evaluated according to the following steps prior to being reported in the tables:

- Analytes that were not detected in any samples within a table were omitted from their respective tables;
- All detected concentrations are shown in bold type; a nondetected concentration is shown as the detection limit reported by the laboratory (i.e., 0.66 U);
- Analytes detected at concentrations greater than the analyte-specific screening value were considered a potential concern, and the concentration is shaded; and
- Analytes without comparative criteria levels are listed in the tables but could not be qualitatively evaluated.

Based on EPA Region 10 policy, evaluation of aluminum, calcium, iron, magnesium, potassium, and sodium (i.e., common earth crust metals) is generally used only in mass tracing, which is beyond the scope of this report. Furthermore, these analytes are not associated with toxicity to humans under normal circumstances (EPA 1996a). For these reasons, these analytes are not included in the evaluation or discussion but are provided in the analytical summary tables.

Alphanumeric identification numbers applied by the START to each sample location (e.g., MP01) are used in the report as the sample location identifiers.

3.4.1 North McConkey Property

The North McConkey property was the former location of the gasworks boilers and associated buildings. Four borehole locations (MP01 through MP04) and one monitoring well (MP04) were installed on the North McConkey property. Samples were collected at 5-foot intervals from ground surface to a total maximum depth of 40 feet bgs. A total of 23 soil samples and three groundwater samples were collected.

Subsurface soil sample results are presented by sampling interval in Appendix B, Tables B-4 through B-12. Sample results indicate the presence of arsenic at concentrations that exceed the MTCA Method A screening criteria of 0.39 milligrams per kilogram (mg/kg) in all samples at all depths. The natural background soil concentration for arsenic ranges between 1.1 and 7.5 mg/kg

(ATSDR 2005). Based on the natural background soil concentration, it appears that the levels of arsenic found in the site soils may be naturally occurring, even though they are above the MTCA Method A screening criteria. A total of seven SVOCs have been detected at concentrations that exceeded their analyte-specific screening criteria. Additionally, these SVOCs were only detected in samples collected from the 0 to 5 feet bgs interval. No VOCs or TPH were detected in the samples at concentrations that exceeded their screening criteria.

Groundwater sample results are presented in Appendix B, Table B-13. Sample results indicate the presence of four TAL metals at concentrations that exceeded their analyte-specific screening criteria. Of these TAL metals, arsenic, chromium, and lead were detected at concentrations that exceeded their screening criteria in all of the groundwater samples. Benzene ranged from 5.4 µg/L to 70 µg/L in two samples, which exceeded the 0.41 µg/L EPA RSL screening criteria, and naphthalene ranged from 0.45 µg/L to 2.3 µg/L in two samples, which exceeded the 0.14 µg/L EPA RSL screening criteria. Ethylbenzene was detected in one sample at concentrations that exceeded its analyte-specific screening criteria. No SVOC analytes were detected at concentrations that exceeded their analyte-specific screening criteria.

3.4.2 Sesko Property

The Sesko property was the former location of multiple petroleum ASTs. Three borehole locations (SP01 through SP03) and one monitoring well (SP02) were installed on the Sesko property. Samples were collected at 5-foot intervals from ground surface to a total maximum depth of 45 feet bgs. A total of 19 soil samples and three groundwater samples were collected.

Sample results are presented by sampling interval in Appendix B, Tables B-4 through B-12. Sample results indicate the presence of arsenic at concentrations that exceed the MTCA Method A screening criteria of 0.39 mg/kg in nearly all samples, except SP02 at 15 feet bgs. The natural background soil concentration for arsenic ranges between 1.1 and 7.5 mg/kg (ATSDR 2005). Thallium also was detected at concentrations that exceeded the EPA RSL screening criteria at borehole SP03 at 20, 30, and 35 feet bgs. Sample results also indicate the presence of nine SVOCs, three VOCs, and two TPHs at concentrations that exceeded the MTCA Method A or EPA RSL screening criteria at sample borehole SP03. Benzene was detected at concentrations that exceeded Method A screening criteria of 30 µg/kg at most sample depths at this borehole.

Groundwater sample results are presented in Appendix B, Table B-13. Sample results indicated the presence of four TAL metals at concentrations that exceeded their analyte-specific screening criteria. Arsenic was the only analyte detected above the analyte-specific screening criteria in all three of the groundwater samples. A total of seven SVOCs were detected at concentrations that exceeded their analyte-specific screening criteria. Groundwater collected at sample location SP02GW did not contain any SVOCs that exceeded their screening criteria. Diesel Range Organics and two VOCs were detected above their

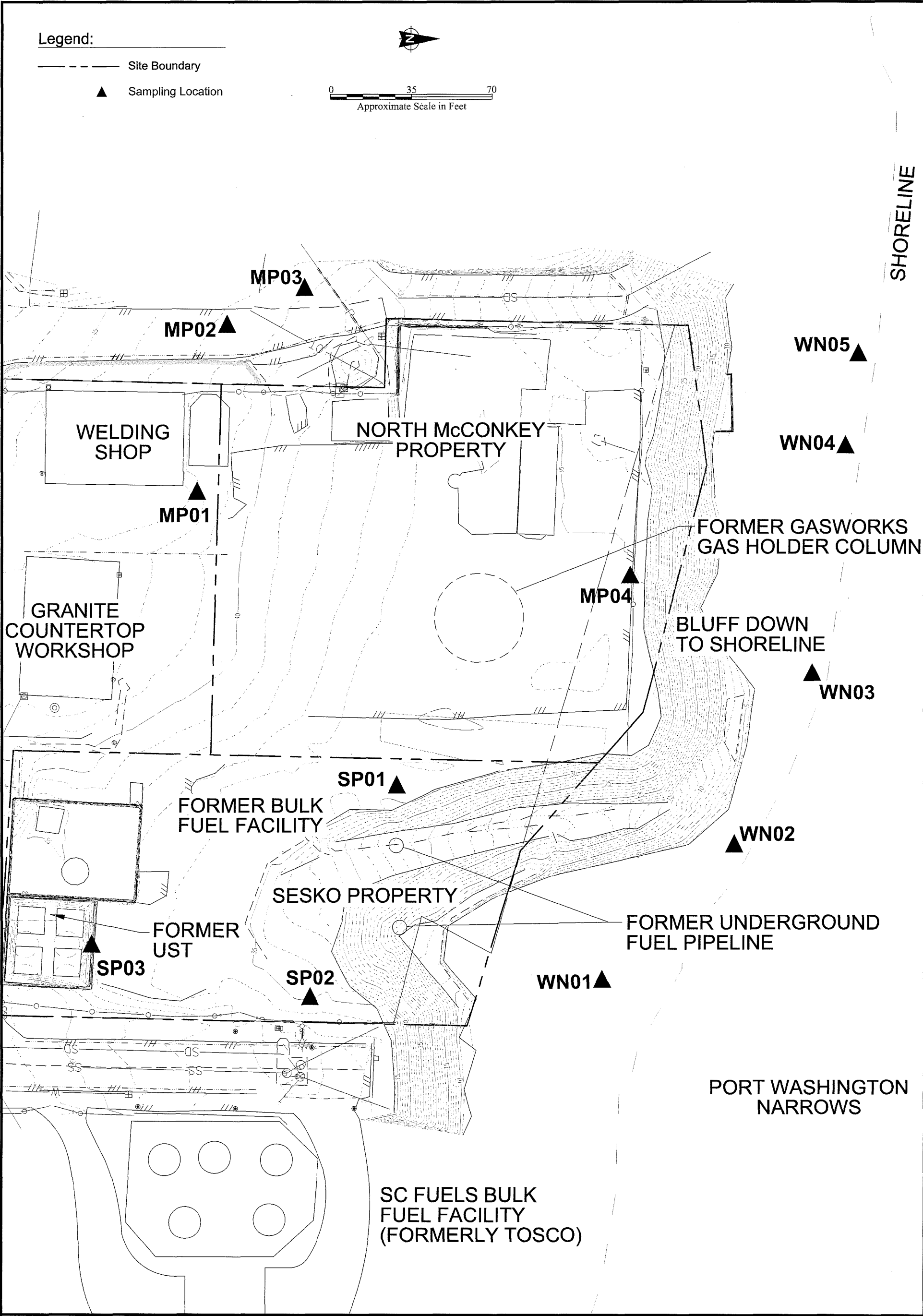



3. Investigation and Results

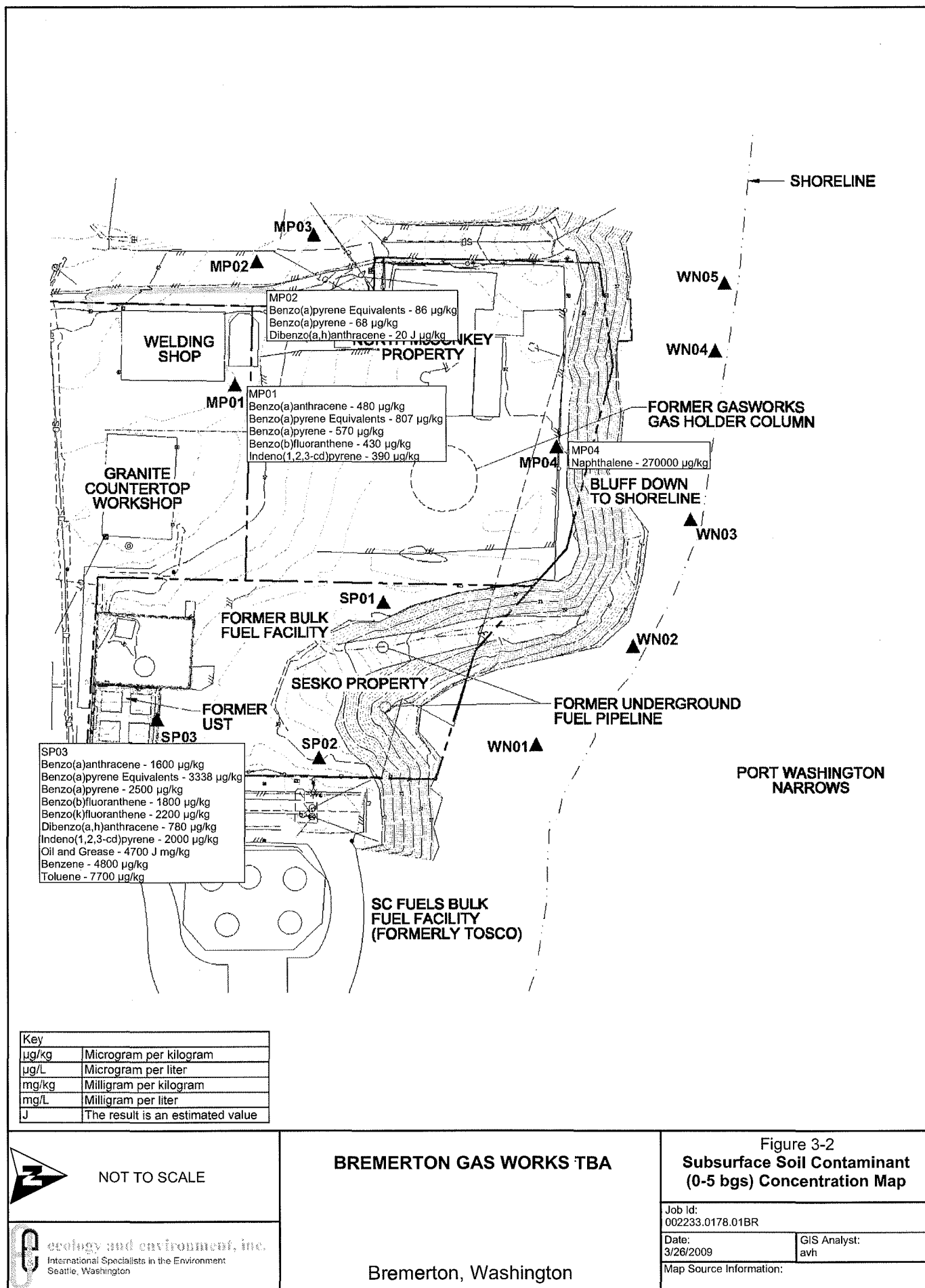
screening criteria in sample SP03GW. No VOCs were detected above their screening criteria in samples SP01GW or SP02GW.

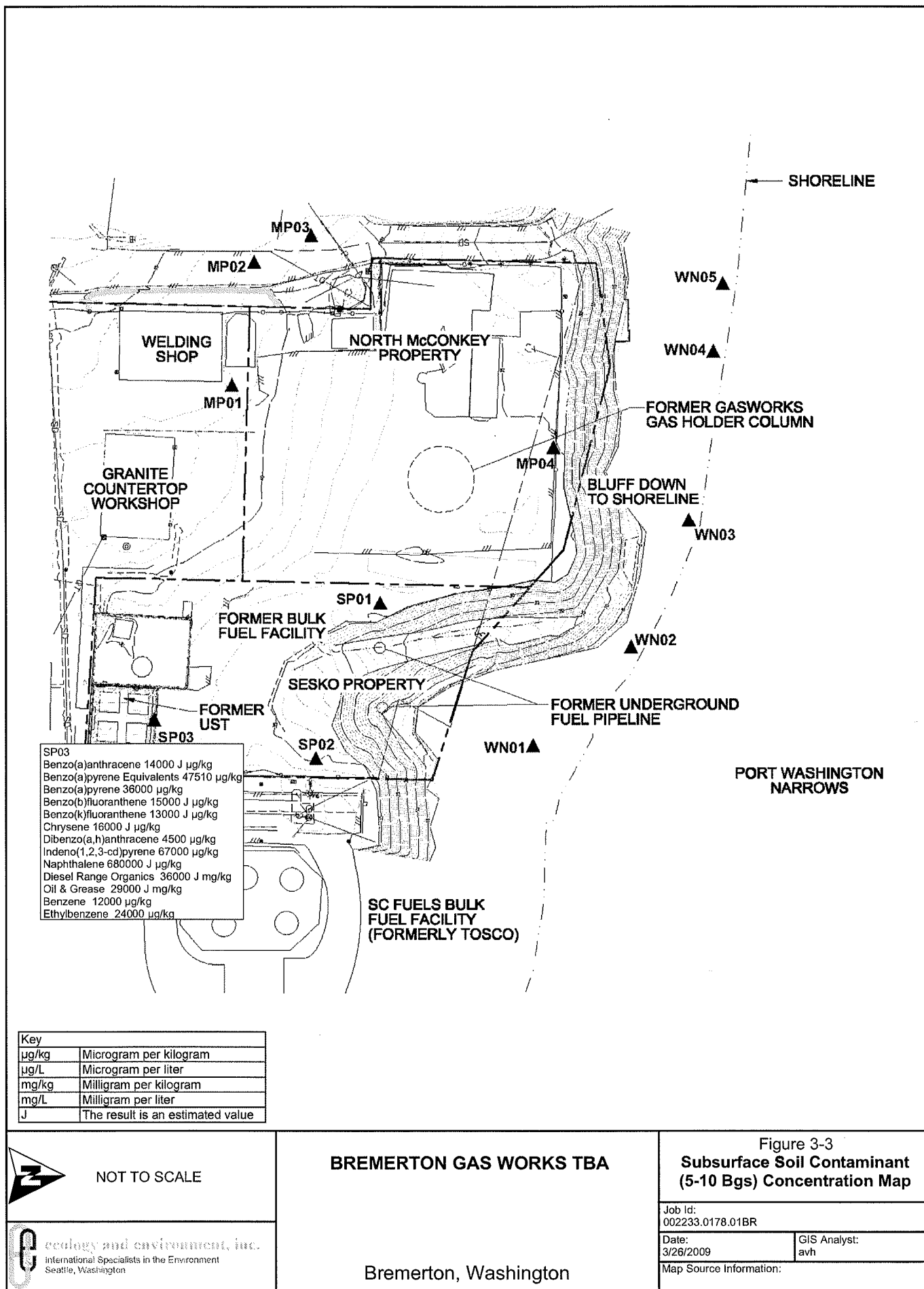
3.4.3 Washington Narrows

The Washington Narrows beachfront is located directly adjacent to the North McConkey and Sesko properties. Five boreholes (WN01SD through WN05SD) were hand-augered up to a depth of 30 centimeters bgs with dedicated stainless steel split-spoon samplers. Samples were collected during low tide. Sample results are presented in Appendix B, Table B-14. Several product seeps were noted near sample locations WN01SD, WN02SD, and WN03SD. Many SVOCs were prevalent at levels that exceeded their analyte-specific screening criteria at WN01SD, WN02SD, WN03SD, and WN04SD. Only pentachlorophenol was detected above the analyte-specific screening criteria for WN05SD. No TAL metals, VOCs, or TPH range analytes were detected above their analyte-specific screening criteria in any sediment samples.

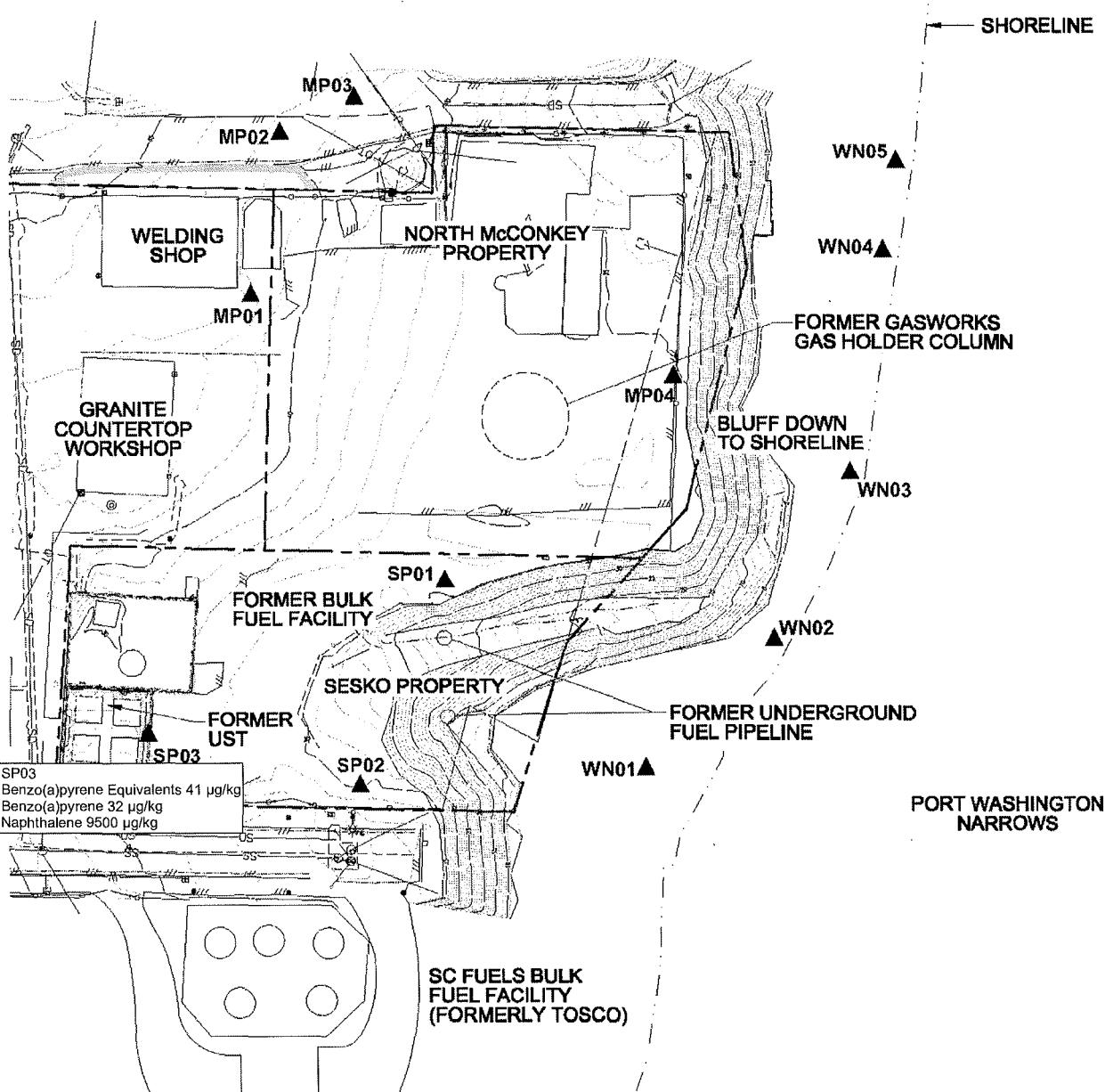




 ecology and environment, inc. International Specialists in the Environment Seattle, Washington	BREMERTON GASWORKS TBA Bremerton, Washington		Figure 3-1 SAMPLING LOCATIONS	
	Base Map Reference: GeoEngineers 2007.	Date: 1/26/09	Drawn by: AES	10:START-3\07010008\fig 3-1



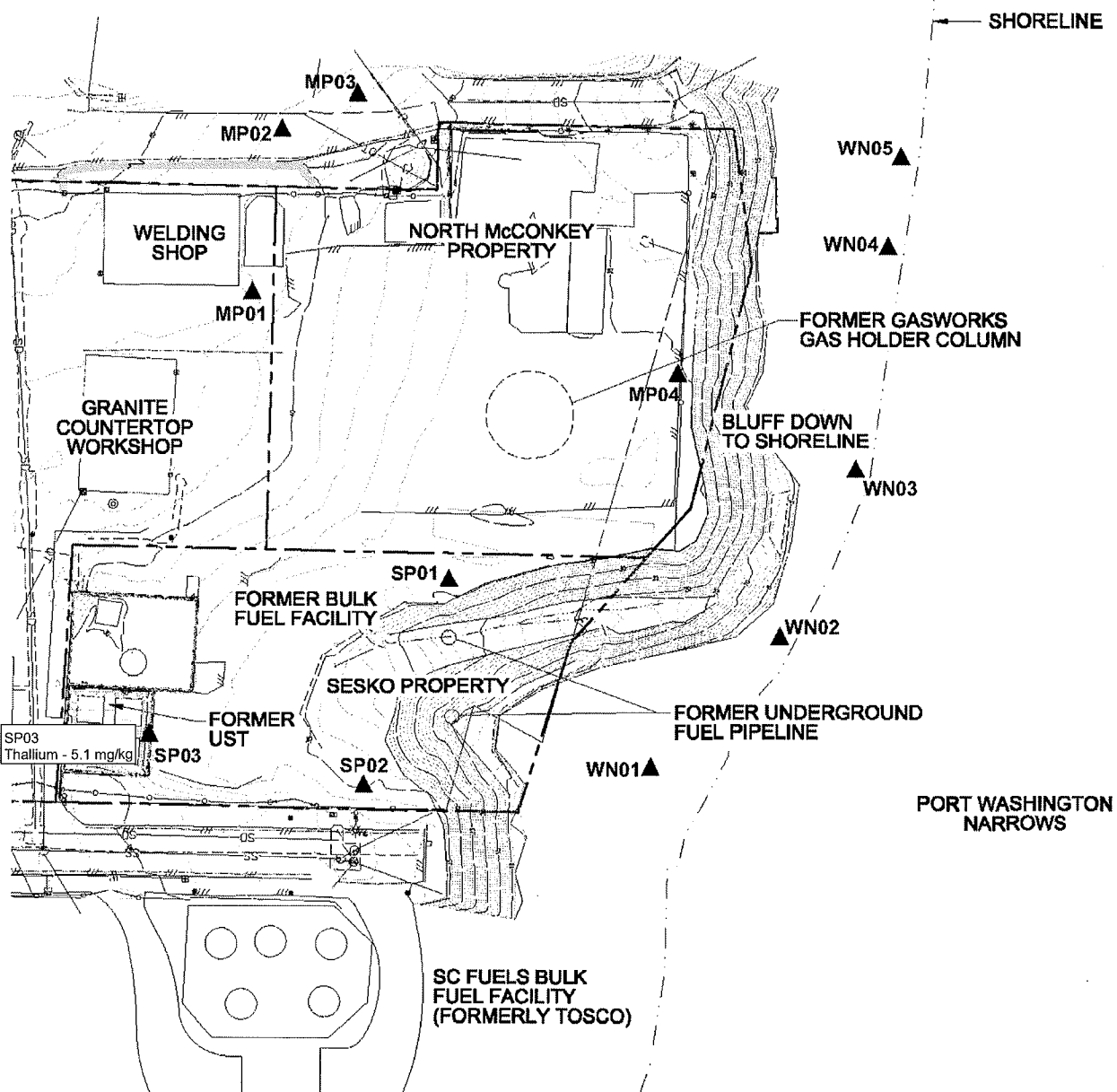


\\edms-projects\Bremerton Gasworks\fig 5-10 bgs_new.mxd



 NOT TO SCALE	BREMERTON GAS WORKS TBA	Figure 3-4 Subsurface Soil Contaminant (10-15 Bgs) Concentration Map	
		Job Id: 002233.0178.01BR	
 ecology and environment, inc. International Specialists in the Environment Portland, Oregon	Bremerton, Washington	Date: 3/26/2009	GIS Analyst: avh
		Map Source Information:	

ledms-projects\Bremerton Gasworks\fig 10-15 bgs_new.mxd



Key	
µg/kg	Microgram per kilogram
µg/L	Microgram per liter
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
J	The result is an estimated value



NOT TO SCALE



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Seattle, Washington

BREMERTON GAS WORKS TBA

Bremerton, Washington

Figure 3-5
Subsurface Soil Contaminant
(15-20 Bgs) Concentration Map

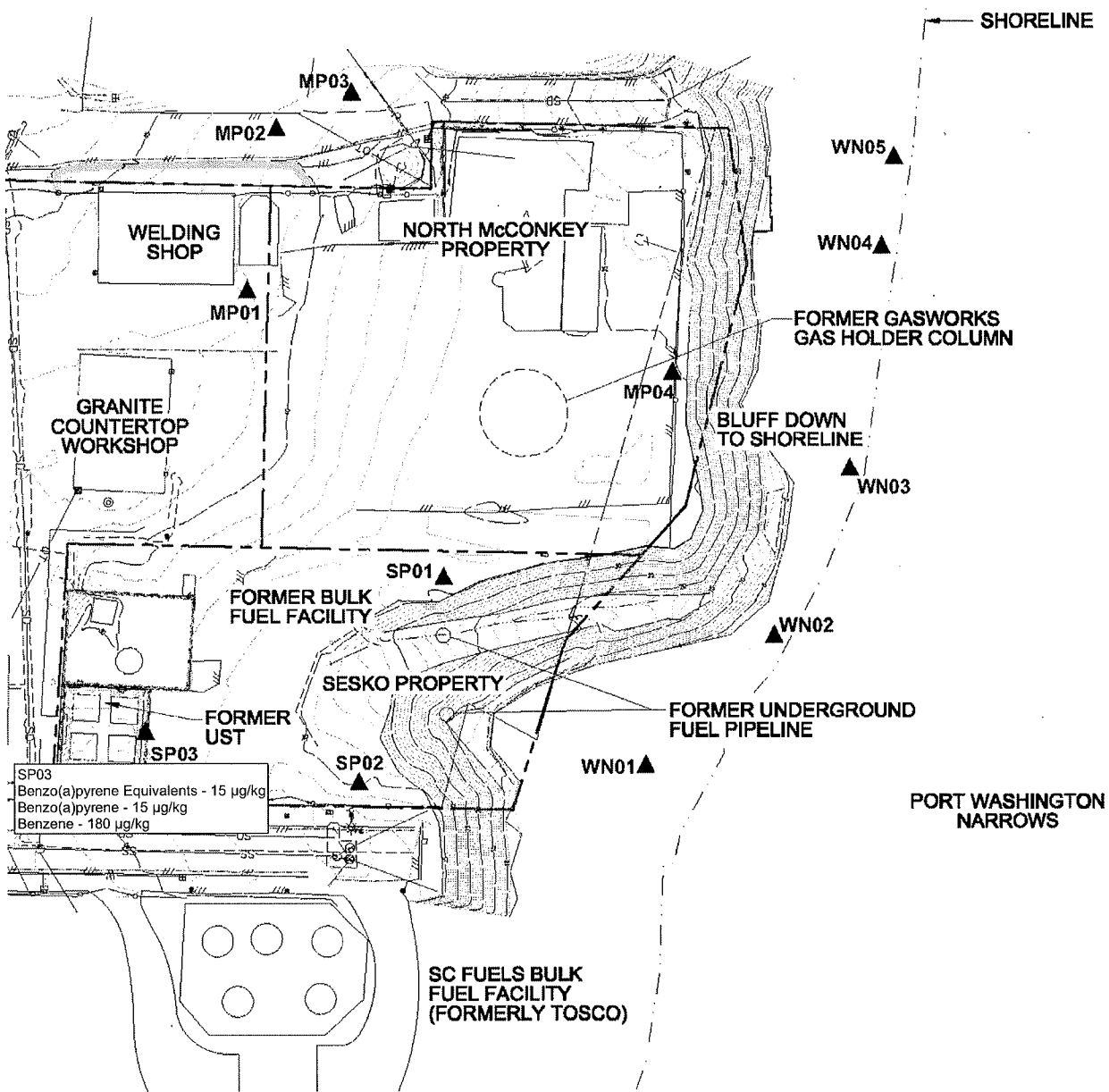
Job Id:
002233.0178.01BR

Date:
3/26/2009

GIS Analyst:
avh

Map Source Information:

ledms-projects\Bremerton Gasworks\fig 15-20 bgs_new.mxd



Key	
µg/kg	Microgram per kilogram
µg/L	Microgram per liter
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
J	The result is an estimated value



NOT TO SCALE



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BREMERTON GAS WORKS TBA

Bremerton, Washington

Figure 3-6
Subsurface Soil Contaminant
(20-25 Bgs) Concentration Map

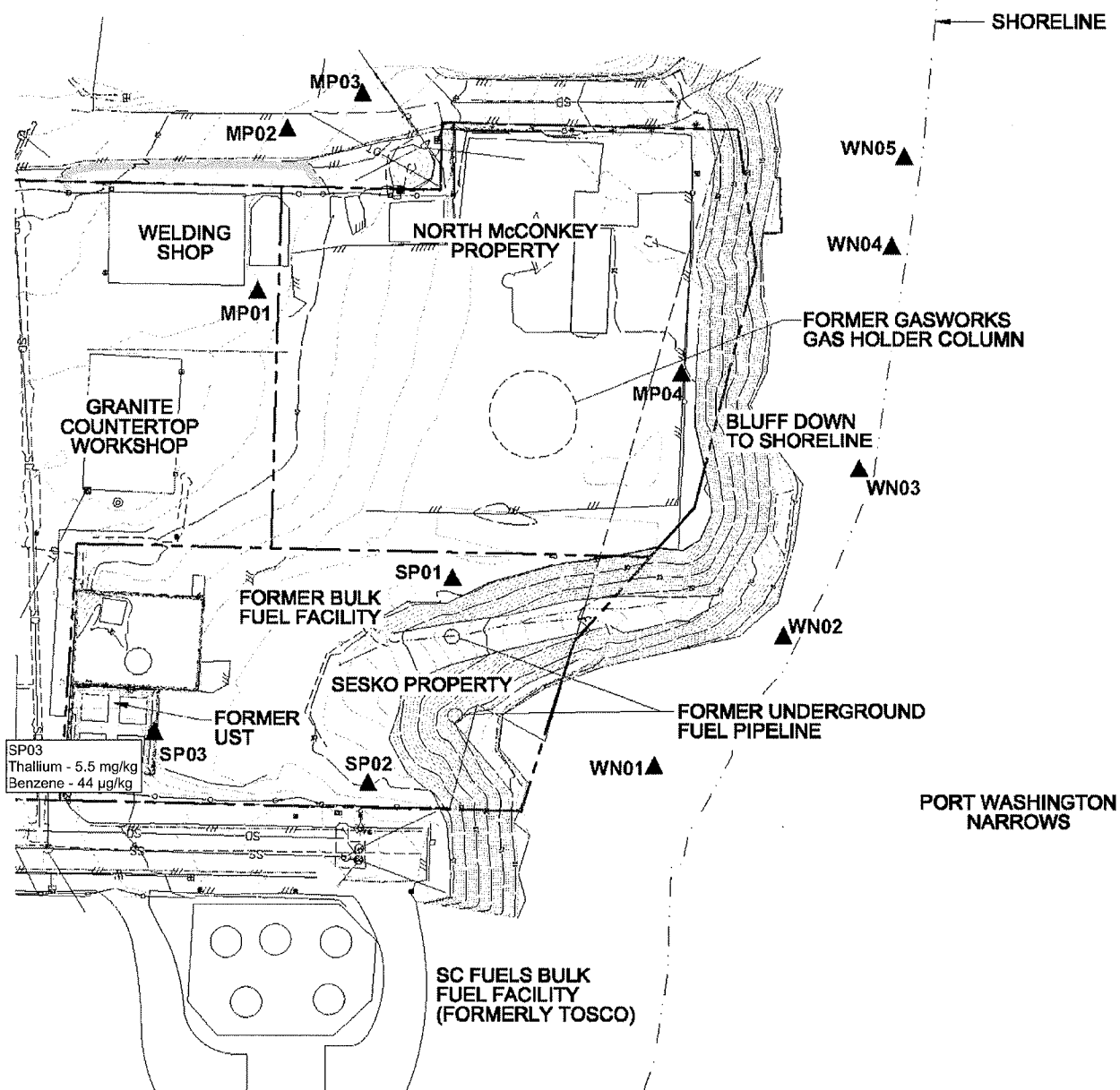
Job Id:
002233.0178.01BR

Date:
3/26/2009

GIS Analyst:
avh

Map Source Information:

ledms-projects\Bremerton Gasworks\fig 20-25 bgs_new.mxd



Key	
µg/kg	Microgram per kilogram
µg/L	Microgram per liter
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
J	The result is an estimated value



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BREMERTON GAS WORKS TBA

Bremerton, Washington

Figure 3-7
Subsurface Soil Contaminant
(25-30 Bgs) Concentration Map

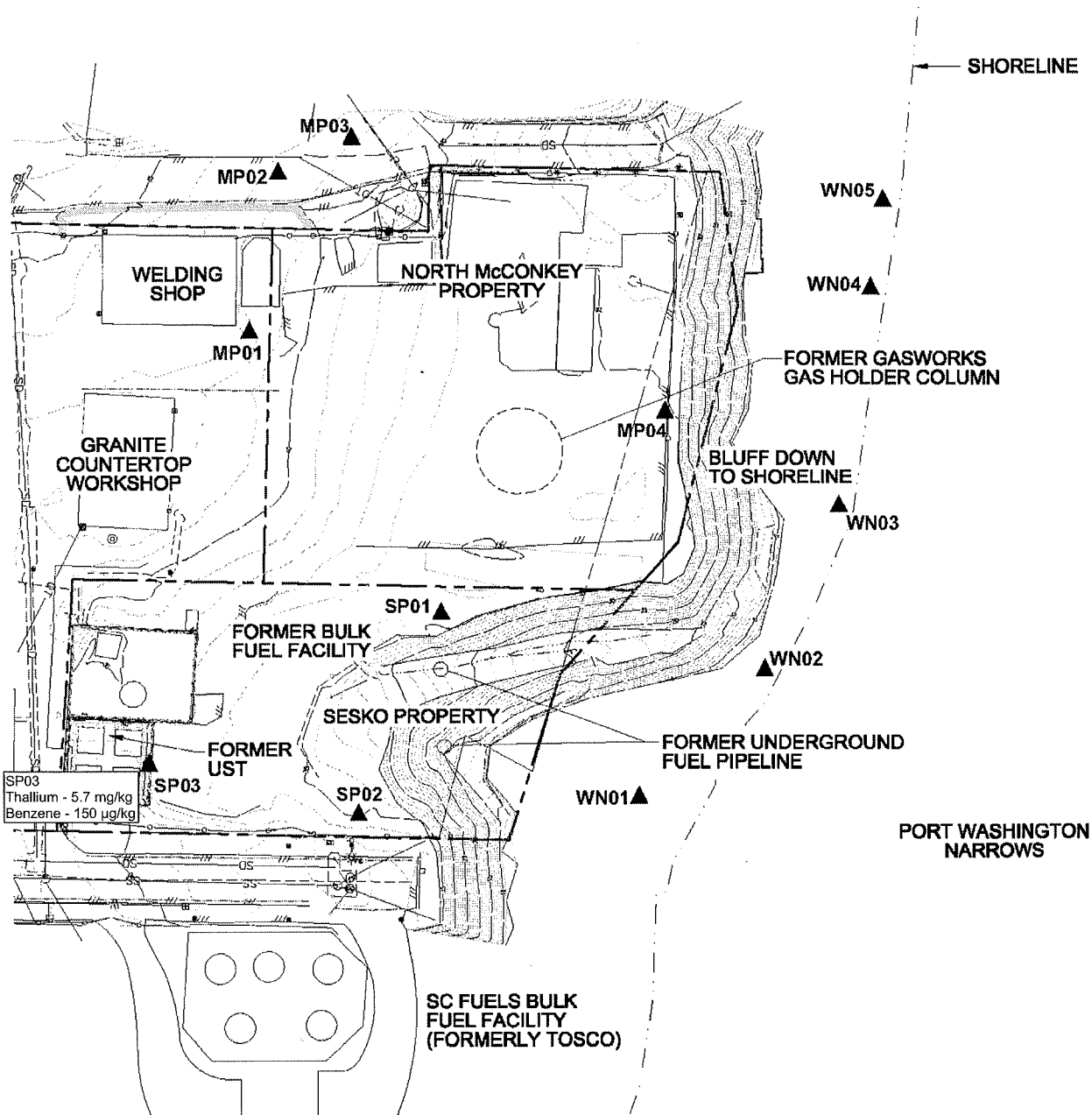
Job Id:
002233.0178.01BR

Date:
3/26/2009

GIS Analyst:
avh

Map Source Information:

ledms-projects\Bremerton Gasworks\fig 25-30 bgs_new.mxd



Key	
µg/kg	Microgram per kilogram
µg/L	Microgram per liter
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
J	The result is an estimated value



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BREMERTON GAS WORKS TBA

Bremerton, Washington

Figure 3-8
Subsurface Soil Contaminant
(30-35 Bgs) Concentration Map

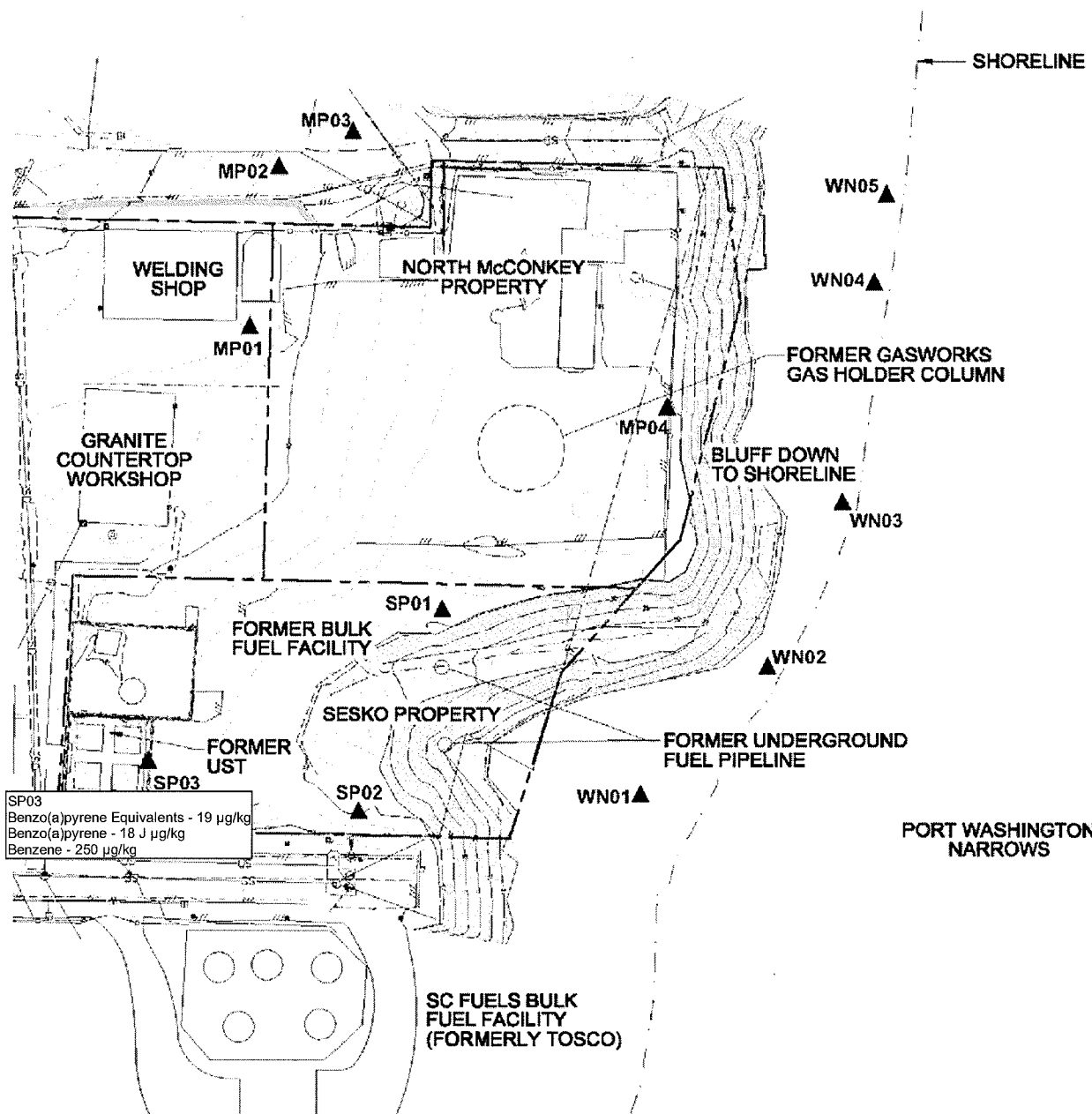
Job Id:
002233.0178.01BR

Date:
3/26/2009

GIS Analyst:
avh

Map Source Information:

\\edms-projects\Bremerton Gasworks\fig 30-35 bgs_new.mxd



SP03
Benzo(a)pyrene Equivalents - 19 µg/kg
Benzo(a)pyrene - 18 J µg/kg
Benzene - 250 µg/kg

Key	
µg/kg	Microgram per kilogram
µg/L	Microgram per liter
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
J	The result is an estimated value



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BREMERTON GAS WORKS TBA

Bremerton, Washington

Figure 3-9
Subsurface Soil Contaminant
(35-40 bgs) Concentration Map

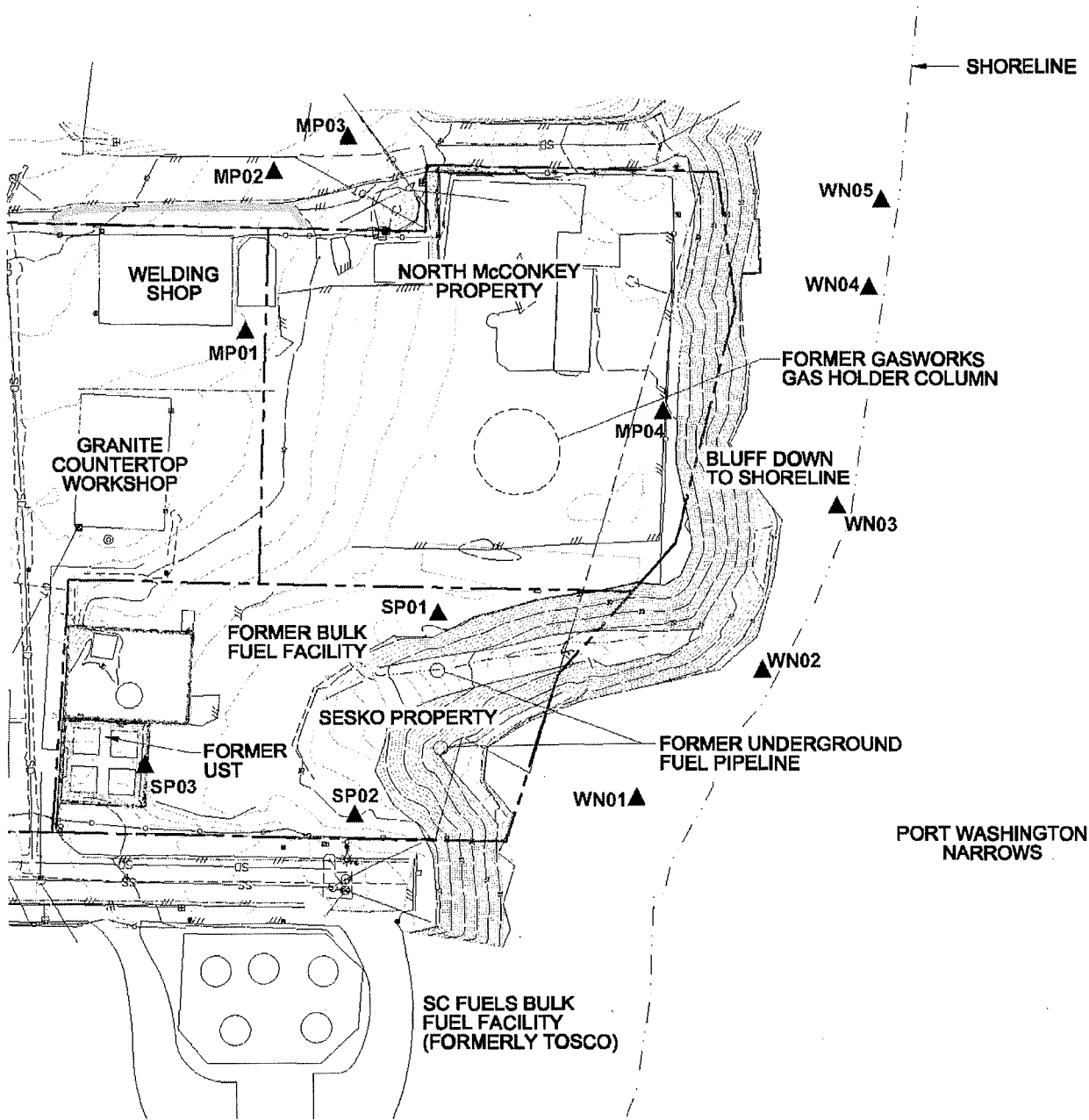
Job Id:
002233.0178.01BR

Date:
3/26/2009

GIS Analyst:
avh

Map Source Information:

ledms-projects\Bremerton Gasworks\fig 35-40 bgs_new.mxd



Key	
µg/kg	Microgram per kilogram
µg/L	Microgram per liter
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
J	The result is an estimated value



NOT TO SCALE



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Seattle, Washington

BREMERTON GAS WORKS TBA

Bremerton, Washington

Figure 3-10
Subsurface Soil Contaminant
(40-45 Bgs) Concentration Map

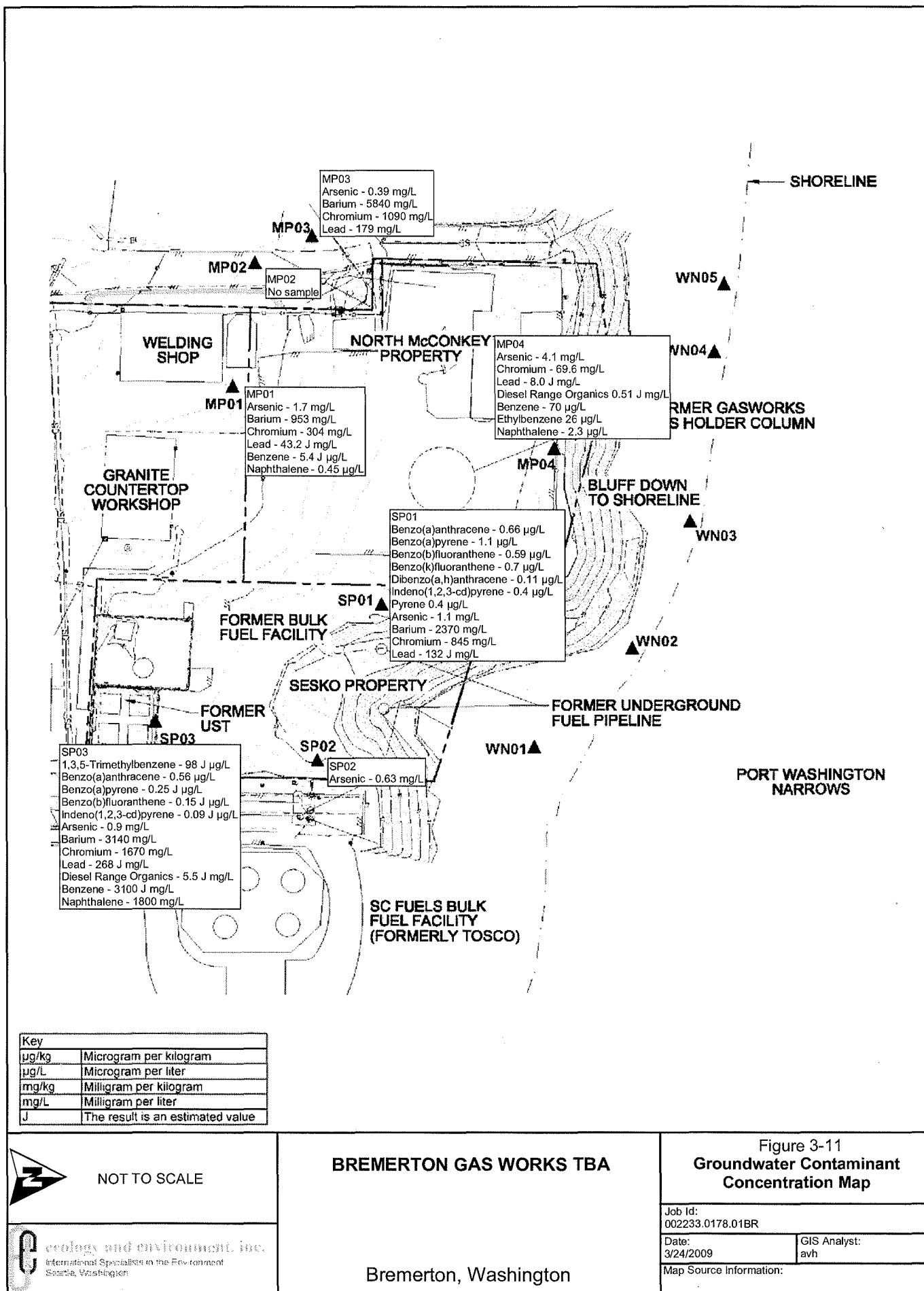
Job Id:
002233.0178.01BR

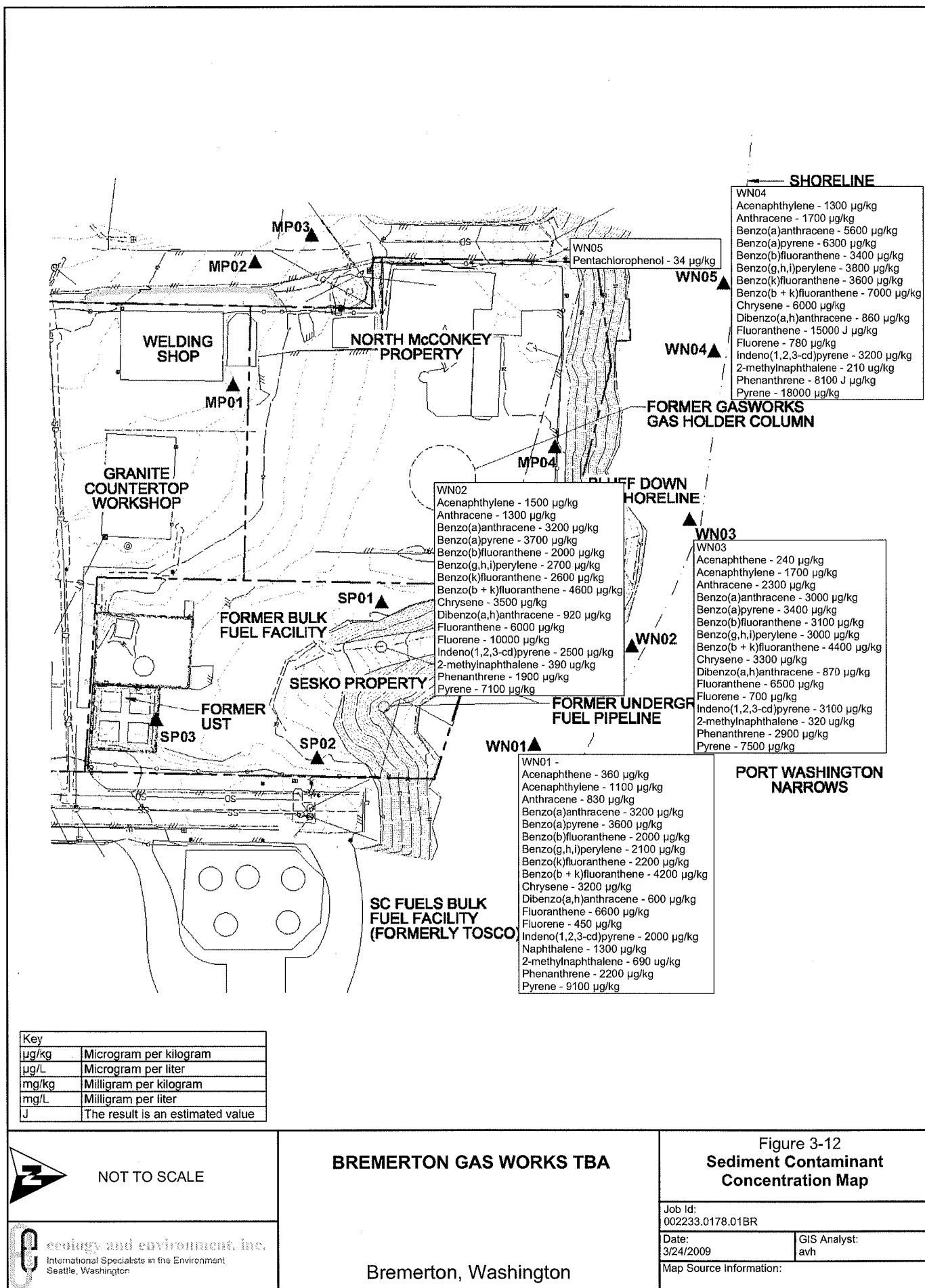
Date:
3/26/2009

GIS Analyst:
avh

Map Source Information:

ledms-projects\Bremerton Gasworks\fig 40-45 bgs_new.mxd





4

Cleanup Options and Cost Estimate

The preliminary investigation conducted during this TBA indicates that cleanup actions may be required at the Bremerton Gasworks site. The following preliminary evaluation of site cleanup options is based on the analytical data gathered during the investigation for the TBA. Before any cleanup action is implemented, further assessment of the site is recommended to close any data gaps in support of an effective remedial action design. Changes in site conditions would require a reevaluation of the following discussion. The cleanup actions and rationale are presented in Tables 4-1 and 4-2. It is recommended that the Ecology Voluntary Cleanup Program (VCP) be consulted prior to conducting any cleanup activities. It is also recommended that future investigations include the collection of surface water samples from Washington Narrows.

This TBA focused on VOC, SVOC, TAL Metals, and TPH-series compounds as the contaminants of concern in all locations. The decision to focus on these contaminants was based on information available and best professional judgment. Given this limitation, it is possible that other contaminants could also be presenting levels that exceed MTCA Method A or EPA RSLs.

The cost estimates included in this section were created by utilizing Remedial Action Cost Engineering and Requirements (RACER®) 2008. RACER® 2008 is a cost estimating computer program that was originally developed for the United States Air Force in 1992 and has since been utilized to meet the needs of various federal agencies and departments, including the United States Army Corp of Engineers and EPA. RACER® 2008 runs on a Microsoft Access platform.

The cleanup options and rationale are presented in Table 4-1. The estimated costs associated with each option are presented in Table 4-2. The inflation mark up from 2008 dollars to 2009 dollars was estimated using the RS Means Historical Cost Indexes. These indexes estimate the national average cost to construct a given project in a given year so that years can be compared side by side. In this case, the national average cost to construct a project in the year 2008 was compared to the national average cost to construct a project in 2009. Based on these indexes, the inflation mark up from 2008 to 2009 was estimated to be 3%. The cleanup option costs are also expressed in terms of present dollars. Because some cost items, such as monitoring, are incurred over a period of time, however, the actual costs may vary from the costs in this analysis.



4. Cleanup Options and Cost Estimate

For the preliminary cost estimate, the quantities of various input parameters (e.g., volume of contaminated soil, number of monitoring wells necessary, etc.) are roughly estimated based on site observations and best engineering judgment. Any new or differing discoveries will most likely affect the estimated costs projected herein.

The cleanup options are presented in order of least to most aggressive in approach. Cleanup options and associated prices are listed below. These estimates include a 15 percent contingency to allow for unforeseen costs. They do not, however, include additional study/investigation, design, long-term monitoring (beyond 5 years), 5-year reviews, site closeout, or other activities. A comprehensive estimate for each option is included in Appendix G.

Option 1

The first cleanup option includes excavation of contaminated soil “hot spots” and installation of an additional four monitoring wells to determine whether groundwater contamination is migrating and, if so, in which direction. The scope of this option is limited to installing monitoring wells, collecting the initial subsurface soil samples, and monitoring groundwater for one year.

Excavation of contaminated soil is recommended at the “hot spots” found at SP03 and MP04. The excavations are anticipated to be 25 by 25 feet to an average depth of 12.5 feet bgs and will contain approximately 600 cubic yards of contaminated soil. For disposal purposes, the contaminated soil is assumed to be hazardous waste. The excavation will be backfilled with clean soil.

Monitoring wells are intended for initial soil and quarterly groundwater sample collection only and not for groundwater treatment. This includes the installation of four 2-inch diameter PVC groundwater monitoring wells (well depth 45 feet bgs) in addition to the existing monitoring wells. Groundwater samples collected from the new wells will help determine whether contamination is migrating in groundwater. This option includes collection of soil samples during installation of the monitoring wells for vertical and horizontal subsurface characterization.

Once the four wells are installed and developed according to standard procedures, a groundwater sample plus a field duplicate will be collected for analysis. Groundwater sampling will be repeated quarterly for three additional quarters (i.e., for one full year). Additional monitoring (with associated sampling costs) may be necessary if the groundwater condition does not meet regulatory standards after the one-year period. Additional monitoring can be conducted to determine whether natural attenuation is occurring, or in conjunction with additional treatment. Such additional monitoring is subject to applicable cleanup regulations under Ecology’s authority.

Subsurface soil and groundwater samples will be handled appropriately and sent to a commercial laboratory for analysis. Additional long-term groundwater monitoring is not included with this option. The estimated cost to complete remediation Option 1 is \$338,984 (Table 4-2).

4. Cleanup Options and Cost Estimate

Option 2

The second cleanup option includes the installation of four monitoring wells and excavation of contaminated soil “hot spots” (as described in Option 1) with the addition of installation of a groundwater pump and treat system.

The groundwater pump and treat system will use carbon absorption to remove the contaminant. Treated water will be discharged to a publically owned treatment works. This system is estimated to operate at a maximum rate of 9 gallons per minute. This option includes installation of four extraction wells in addition to the four monitoring wells. Monitoring well samples will be collected quarterly for five years to monitor the groundwater condition. The treated effluent condition will be sampled monthly for five years. The cost also includes regular maintenance and change out of the carbon adsorption unit. Additional monitoring (with associated sampling costs) may be necessary if the groundwater condition does not meet regulatory standards at the end of the proposed five-year monitoring period. Such additional monitoring is subject to applicable cleanup regulations under Ecology’s authority. The estimated cost to complete remediation Option 2 is \$ 973,331 (Table 4-2).

Option 3 –

The third cleanup option includes Option 2 plus the dredging and disposal of sediments, installation of an upland barrier wall, and installation of an upland asphalt cap.

Nearshore dredging of the Washington Narrows beachfront will require barge-based excavation equipment. Dredging best practices will require bathymetric surveying, deployment of sediment booms, silt curtains, and sediment dewatering. The dredging area is located north of the Sesko property on the Washington Narrows. The dredging excavation is anticipated to be 50 by 350 feet at a depth of 4 feet, or approximately 2,600 cubic yards for off-site disposal at a non-hazardous waste facility.

A soil-bentonite upland barrier wall will prevent upland contamination from migrating to the Washington Narrows beachfront. A soil bentonite barrier wall is constructed via an excavated slurry trench, pouring liquid bentonite and mixing in clean fill soil. This type of barrier wall was installed at the McCormick and Baxter Superfund site in Portland, Oregon. The soil bentonite wall was selected due to its lower cost compared to sheet piling and its effective use in a marine environment (E & E 2004).

Installation of an asphalt surface cap includes a high density polyethylene geomembrane. This will prevent surface water runoff from coming into contact with contaminated site soils, potentially carrying contaminants to the groundwater and Washington Narrows. The high density polyethylene geomembrane will be layered with a drainage layer on top, overlain by the asphalt surface. This will allow any stormwater infiltrating the asphalt to flow downgradient without



4. Cleanup Options and Cost Estimate

entering the vadose zone. The estimated cost to complete remediation Option 3 is \$2,867,432 (Table 4-2).

Qualifiers Relating to Clean Up Options

Based on the limited information acquired during the investigation, several assumptions were used to determine the cost estimates. All site work will be conducted in Level D personal protective equipment (coveralls, hard hats, safety glasses, steel-toe safety boots, and reflective vests). For disposal purposes, excavated "hot spot" soil materials are assumed to be "hazardous" materials. Dredged sediments are assumed to be "non-hazardous" materials as per state and federal disposal regulations. Additional costs to sample previously installed monitoring wells are not included in the estimates. All estimates are based on 2009 dollars.

**4. Cleanup Options and Cost Estimate****Table 4-1 Cleanup Estimate Option and Rationale**

Cleanup Action	Rationale
Option 1 - Excavation of contaminated soil and monitoring well installation	Lowest cost option: removing contaminated soil and collection of additional data for future remediation decision making purposes.
Option 2 - Excavation of contaminated soil and installation of a pump and treat groundwater system	Mid-range cost option: collecting additional data, removing contaminated soil, and treating groundwater. This option immediately addresses upland contamination.
Option 3 - Dredging of shoreline sediments, installation of an upland barrier wall, and installation of an upland asphalt cap.	High range cost, the most comprehensive option: addresses removal of contaminated soils, sediments, and groundwater. This option also prevents residual contamination from migrating into the lowland sediments.

Table 4-2 Preliminary Cost Estimate for Cleanup Action

Remediation Options	Description	Estimated Cost
Option 1	Excavation of hot spot contaminated soil and monitoring well installation	
	Soil Excavation and Off-Site Disposal (hazardous waste) - assumes excavation of 2 upland hot spots (600 cubic yards total); offsite disposal at hazardous waste facility; backfilling; decontamination facilities; analytical testing	\$183,466
	Monitoring Well Installation - Install 4 monitoring wells to 45' bgs (includes initial subsurface soil sampling/analysis, and one year of groundwater monitoring)	\$102,582
	Subtotal	\$286,048
	Contingency ^a (+15%)	\$42,907
	2009 Inflation adjustment ^b	\$10,029
	Total	\$338,984
Option 2	Excavation of hot spot contaminated soil and installation of a pump and treat groundwater system	
	Soil Excavation and Off-Site Disposal (hazardous waste) - assumes excavation of 2 upland hot spots (600 cy total); offsite disposal at hazardous waste facility; backfilling; decontamination facilities; analytical testing	\$183,466
	Monitoring Well Installation - assumes 4 monitoring wells to 45' bgs (includes sampling/analysis)	\$42,587
	Groundwater Treatment - assumes 150' x 350' contamination plume; pump and treat with filtration and 2 carbon vessels (in series) w/ treated water discharge to POTW	\$148,804
	Groundwater Treatment O&M and Monitoring- assumes 5 year operation and monitoring	\$446,477
	Subtotal	\$821,334
	Contingency ^a (+15%)	\$123,200
	2009 Inflation adjustment ^b	\$28,797
	Total	\$973,331
Option 3	Dredging of shoreline sediments, installation of an upland barrier wall, and installation of an upland asphalt cap.	
	Soil Excavation and Off-Site Disposal (Haz) - assumes excavation of 2 upland hot spots (600 cy total); offsite disposal at haz facility; backfilling; decontamination facilities; analytical testing	\$183,466
	Monitoring Well Installation - assumes 4 monitoring wells to 45' bgs (includes sampling/analysis)	\$42,587
	Groundwater Treatment - assumes 150' x 350' contamination plume; pump and treat with filtration and 2 carbon vessels (in series) with treated water discharge to POTW	\$148,804
	Groundwater Treatment O&M and Monitoring - assumes 5 year operation and monitoring	\$446,477
	Barrier Wall - assumes soil bentonite barrier wall (i.e., slurry wall) around GW plume; dimensions: 1000' long x 60' deep with 12" protective gravel cover	\$539,517
	Upland Cap - assumes cap dimensions 150' x 350'; HDPE geomembrane with drainage/protection layer overlain with 3" thick asphalt surface layer (includes gas vents and perimeter security fence)	\$411,935
	Sediment Dredging - assumes nearshore sediment dredging using water-based equipment; includes bathymetric surveying (pre and post construction), sediment BMPs (e.g., booms, silt curtains, etc.), and sediment dewatering; dredge area 50' x 350' x 4' deep or approx. 2600 cubic yards	\$453,126
	Sediment Disposal - assumes offsite transportation and disposal of dredged sediment (following dewatering/solidification) at non-haz facility; 2600 cubic yards	\$193,737
	Subtotal	\$2,419,649
	Contingency ^a (+15%)	\$362,947
	2009 Inflation adjustment ^b	\$84,836
	Total	\$2,867,432

Notes:

1. Costs estimates developed using Remedial Action Cost Engineering and Requirements (RACER®), 2008, Software System for Windows
2. Estimates do not include additional study/investigation (e.g., RI/FS), design, long term monitoring, 5 year reviews, site closeout, etc.
3. Costs includes direct costs plus a location modifier of 1.021 (Washington State Average) and overhead and profit (25% field office overhead, 10% subcontractor profit, and 15% prime profit).

^a The 15% contingency allows for unforeseen costs.

^b Inflation mark up estimated using the RSMeans Historical Cost Index inflation mark up from 2008 to the first quarter of 2009

5

Conclusions

The Bremerton Gasworks site, which is located in Bremerton, Washington, was the subject of this TBA. During the investigation, potential sources of contamination were identified. The field sampling event was conducted from May 12 to May 15 and on May 19 and June 4, 2008. For this TBA, seven subsurface boreholes locations were drilled to total depths of 45 feet bgs. A total of 65 subsurface soil and groundwater samples were collected. Five sediment samples were collected from the beach along the Washington Narrows. The analytical results for these samples were compared to either MTCA Method A or EPA RSL screening criteria values for soil and groundwater, NOAA SQuiRTs and Washington State SQS values for sediments.

SVOCs, TAL metals, TPHs, and VOCs are present at various locations around the site but in no discernable pattern. The aerial extent of contamination is limited to several localized "hot spots," but lateral extent is limited to specific subsurface layers. VOC and SVOC contamination does appear to decrease with depth at all borehole locations at the McConkey Property and the Sesko Property. Analytical results of the subsurface soil samples indicate that arsenic is present in all locations at all sample intervals at concentrations that exceed its analyte-specific screening criteria. Based on the natural background soil concentration (1.1 mg/kg to 7.5 mg/kg), it appears that the levels of arsenic found in the site soils may be naturally occurring, even though they are above the MTCA Method A screening criteria.

Analytical results of the on-site groundwater samples indicate that soil contamination has migrated to groundwater. Sample results indicate that SVOC, TPH-diesel, and VOC contamination is present in the water table.

Analytical results of the sediment samples collected on the Washington Narrows indicated the presence of SVOCs at concentrations that exceeded their screening criteria. Based on the analytical results, it appears that contamination from previous operations at the site has migrated to the sediments and, potentially, the surface water in Washington Narrows. Several active seeps were discovered along the Washington Narrows beachfront.

The cleanup options and estimated costs discussed in Section 4 include three remediation options. The first option includes removal of approximately 600 cubic yards of contaminated soil and installation of four monitoring wells to gather additional groundwater contamination data. The second option includes action to be taken under option 1, plus installation of a groundwater pump and



5. Conclusions

treat system. The third option includes remediation options 1 and 2, plus installation of an upland barrier wall, installation of an asphalt soil cap, and sediment dredging of the Washington Narrows sediments. Additional cleanup options that were not discussed in Section 4 may be available as well.

Based on analytical results and professional judgment, it is recommended that the City of Bremerton consult with the Department of Ecology to expedite the remediation process.

6

References

- ATSDR, 2005. Bremerton Naval Complex including Puget Sound Naval Shipyard Bremerton, Kitsap County, Washington. National Technical Information Service, Springfield, Virginia.
- Buchman, M.F. 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle, WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration, 34 pages.
http://response.restoration.noaa.gov/book_shelf/122_NEW-SQuiRTs.pdf
- _____, March 2008b, Bremerton Gasworks Targeted Brownfields Assessment Sampling and Quality Assurance Plan, Bremerton, Washington. Prepared for the United States Environmental Protection Agency contract number S&-02-06, Seattle, Washington
- _____, February 2, 2007, START interview with McConkey property operator Trip McConkey, Bremerton, WA.
- _____, April 2004, McCorkmick and Baxter Remedial Action Construction Summary Report Assessment, Portland, Oregon. Prepared for the Oregon Department of Environmental Quality task order 71-03-12, Portland, Oregon
- GeoEngineers, September 20, 2007, *Preliminary Upland Assessment Report, McConkey/Sesko Properties*, Seattle, WA .
- RACER, Remedial Action Cost Engineering and Requirements (RACER), 2008, Software System for Windows
- RSMeans, Historical Cost Index 2008 – 2009 edition, Phillip R. Wairer, R.S. Means Company, Chicago, IL.
- TechLaw, Inc., August 22, 2006, *Phase I Targeted Brownfields Site Assessment*, Port Orchard, WA.
- United States Environmental Protection Agency (EPA), March 2009, EPA Mid-Atlantic Risk Assessment Risk Based Concentration Tables
http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/faq.htm



6. References

- _____, October 2002a, EPA Brownfields Economic Redevelopment Initiative, Office of Solid Waste and Emergency Response, Quick Reference Sheet, 500-F00-241.
- _____, December 2002b. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.
<http://www.epa.gov/superfund/health/conmedia/soil/index.html>
- _____, 1996a. Soil Screening Guidance: User's Guide. Office of Emergency and Remedial Response. Washington, DC. OSWER No. 9355.4-23
<http://www.epa.gov/superfund/health/conmedia/soil/index.htm#user>
- _____, 1996b. Soil Screening Guidance: Technical Background Document. Office of Emergency and Remedial Response. Washington, DC. OSWER No. 9355.4-17A
<http://www.epa.gov/superfund/health/conmedia/soil/introtbd.htm>
- _____, 1991. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). Office of Emergency and Remedial Response. EPA/540/R-92/003. December 1991.
- Washington State Department of Ecology (Ecology), March 2009, Facility/Site Search Database, Facility Identification Number 2788449
<https://fortress.wa.gov/ecy/facilitysite/search/FSDetailReport.aspx?id=2788449>
- _____, October 2008, *Model Toxics Control Act Cleanup Regulations Chapter 173-340 WAC*, Publication Number 94-06, Washington State Department of Ecology Toxics Cleanup Program.
- _____, Ecology. 2007. Evaluating the toxicity and assessing the carcinogenic risk of environmental mixtures using toxicity equivalency factors
<https://fortress.wa.gov/ecy/clarc/FocusSheets/tef.pdf>

A

Photographic Documentation

PHOTO DOCUMENTATION

Site: Bremerton Gasworks Targeted Brownsfield Assessment	Lat/Long: 47.578067,-122.642956	Date: 5/12/2008-5/19/2008, 6/4/2008
Location: Bremerton, WA	Camera: Sony Cybershot 73	Photographer: Bryce Robbert, WSI – Joanne LaBaw, EPA

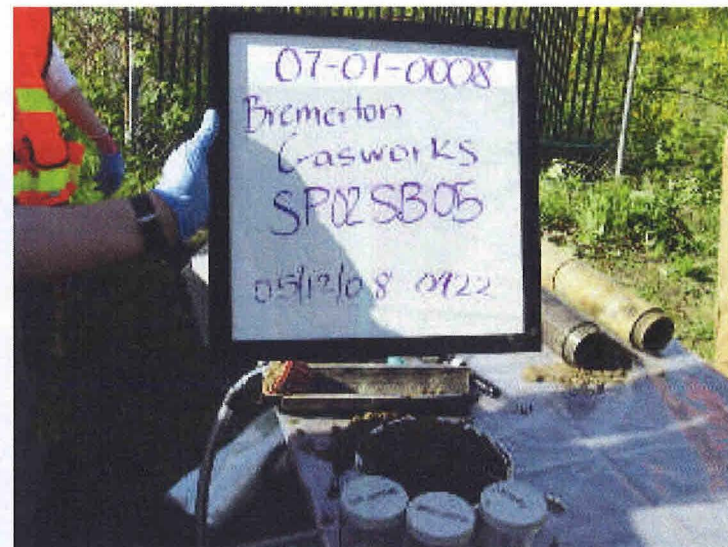


Description: Subcontractor drilling at SP03

Time: 08:25

Direction: Northwest

Photo No: 1773



Description: Collection of sample SP02SB05

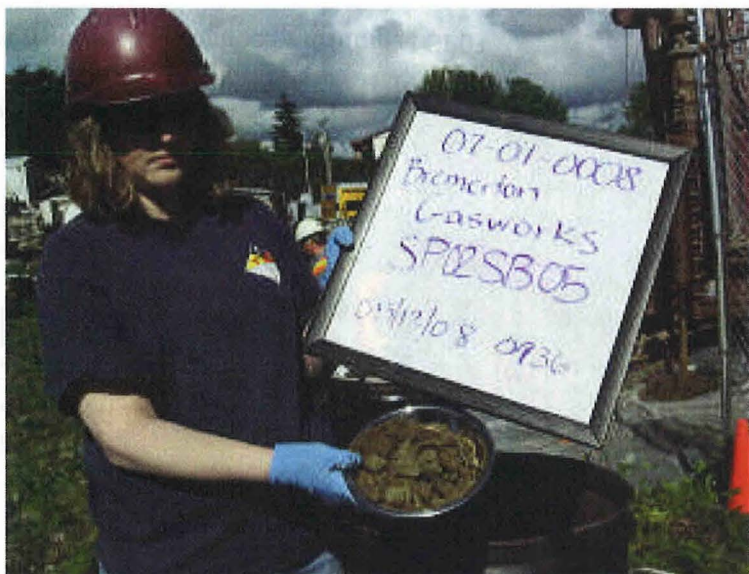
Time: 07:48

Direction: Down

Photo No: 1771

PHOTO DOCUMENTATION

Site: Bremerton Gasworks Targeted Brownsfield Assessment	Lat/Long: 47.578067,-122.642956	Date: 5/12/2008-5/19/2008, 6/4/2008
Location: Bremerton, WA	Camera: Sony Cybershot 73	Photographer: Bryce Robbert, WSI – Joanne LaBaw, EPA

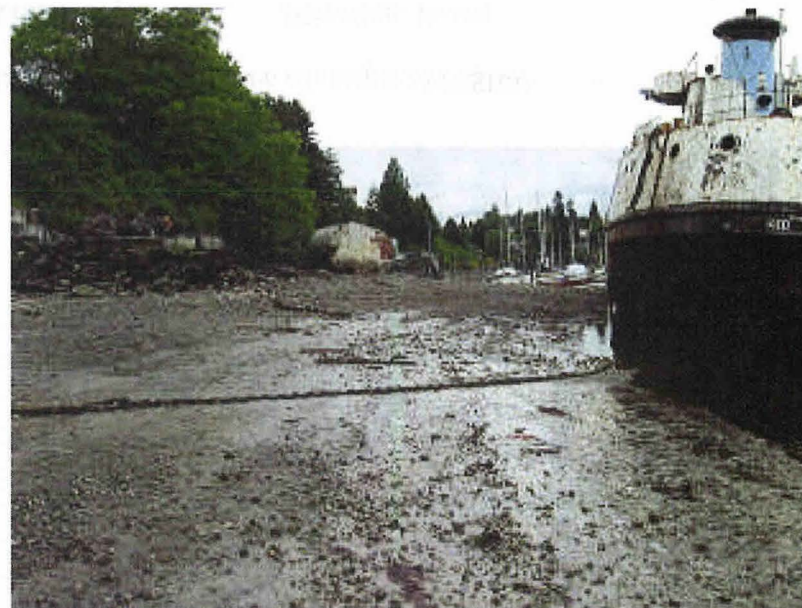


Description: Collection of soil sample at SP02

Time: 07:49

Direction: West

Photo No: 1772



Description: North McConkey beachfront property

Time: 11:18

Direction: West

Photo No: 0714

PHOTO DOCUMENTATION

Site: Bremerton Gasworks Targeted Brownsfield Assessment	Lat/Long: 47.578067,-122.642956	Date: 5/12/2008-5/19/2008, 6/4/2008
Location: Bremerton, WA	Camera: Sony Cybershot 73	Photographer: Bryce Robbert, WSI – Joanne LaBaw, EPA



Description: Sesko beachfront property on the Washington Narrows

Time: 11:18

Direction: South

Photo No: 0715



Description: EPA/START collecting samples on the Washington Narrows

Time: 11:21

Direction: Southeast

Photo No: 0716

PHOTO DOCUMENTATION

Site: Bremerton Gasworks Targeted Brownsfield Assessment	Lat/Long: 47.578067,-122.642956	Date: 5/12/2008-5/19/2008, 6/4/2008
Location: Bremerton, WA	Camera: Sony Cybershot 73	Photographer: Bryce Robbert, WSI – Joanne LaBaw, EPA



Description: Unknown drainpipe near the Sesko beachfront property

Time: 12:21

Direction: Down

Photo No: 0717



Description: Abandoned drums (filled with solid debris) near the North McConkey Property

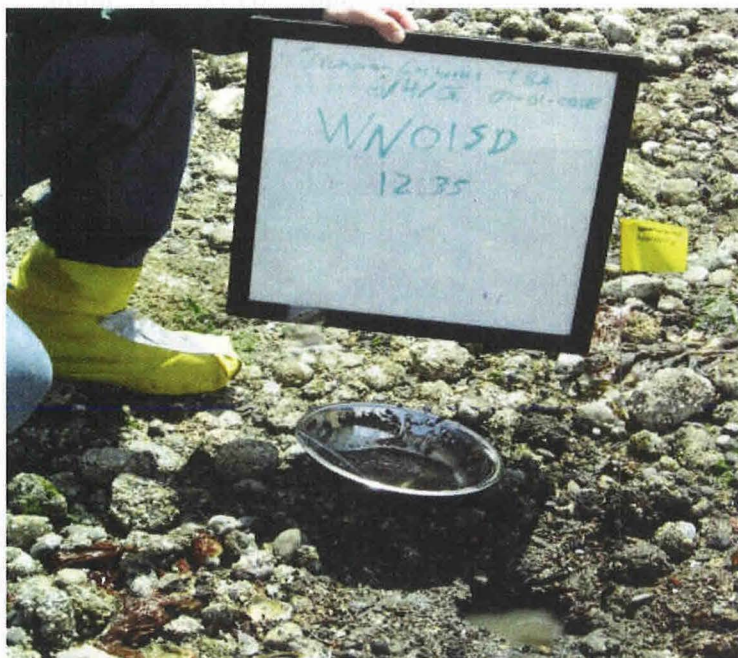
Time: 12:24

Direction: Down

Photo No: 0718

PHOTO DOCUMENTATION

Site: Bremerton Gasworks Targeted Brownsfield Assessment	Lat/Long: 47.578067,-122.642956	Date: 5/12/2008-5/19/2008, 6/4/2008
Location: Bremerton, WA	Camera: Sony Cybershot 73	Photographer: Bryce Robbert, WSI – Joanne LaBaw, EPA



Description: START collecting sample WN01SD

Time: 13:17

Direction: Down

Photo No: 0723



Description: START collecting sample WN02SD

Time: 14:05

Direction: West

Photo No: 0724

PHOTO DOCUMENTATION

Site: Bremerton Gasworks Targeted Brownsfield Assessment	Lat/Long: 47.578067,-122.642956	Date: 5/12/2008-5/19/2008, 6/4/2008
Location: Bremerton, WA	Camera: Sony Cybershot 73	Photographer: Bryce Robbert, WSI – Joanne LaBaw, EPA

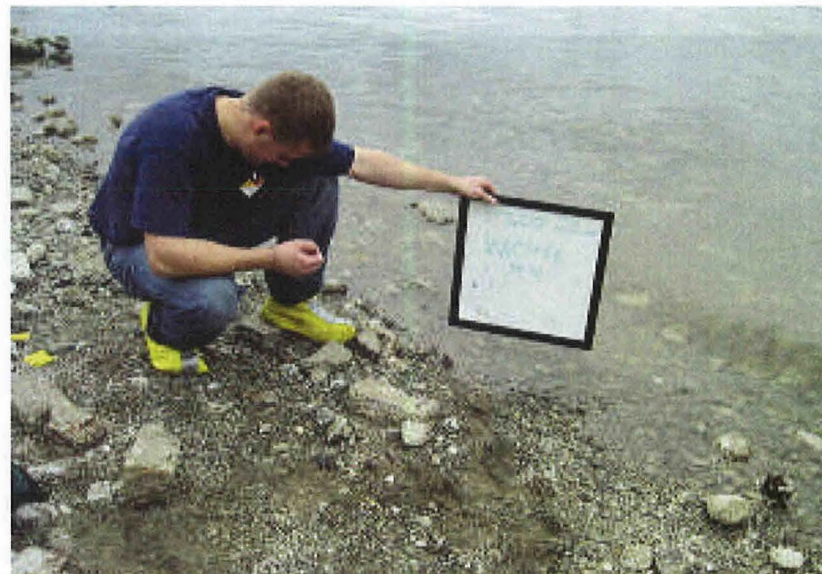


Description: START collecting sample WN03SD

Time: 14:23

Direction: Down

Photo No: 0725



Description: START collecting sample WN04SD

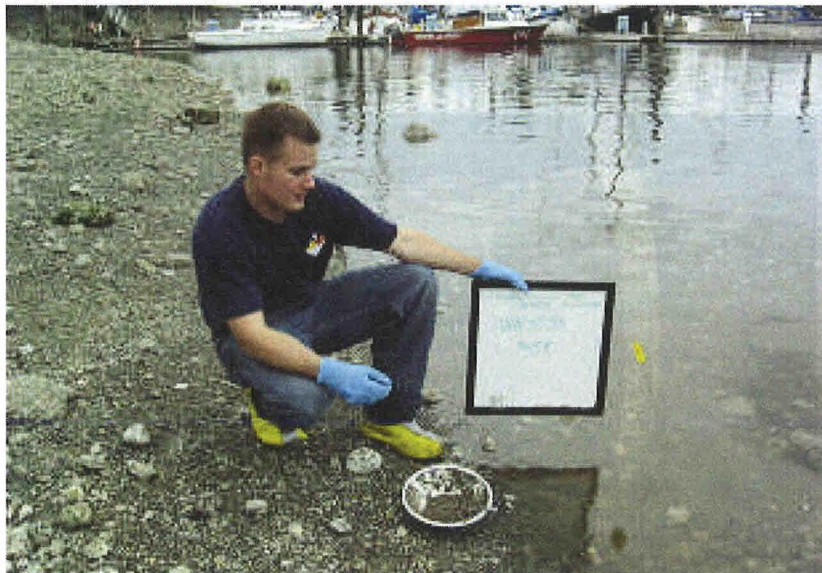
Time: 14:47

Direction: Down

Photo No: 0726

PHOTO DOCUMENTATION

Site: Bremerton Gasworks Targeted Brownsfield Assessment	Lat/Long: 47.578067,-122.642956	Date: 5/12/2008-5/19/2008, 6/4/2008
Location: Bremerton, WA	Camera: Sony Cybershot 73	Photographer: Bryce Robbert, WSI – Joanne LaBaw, EPA

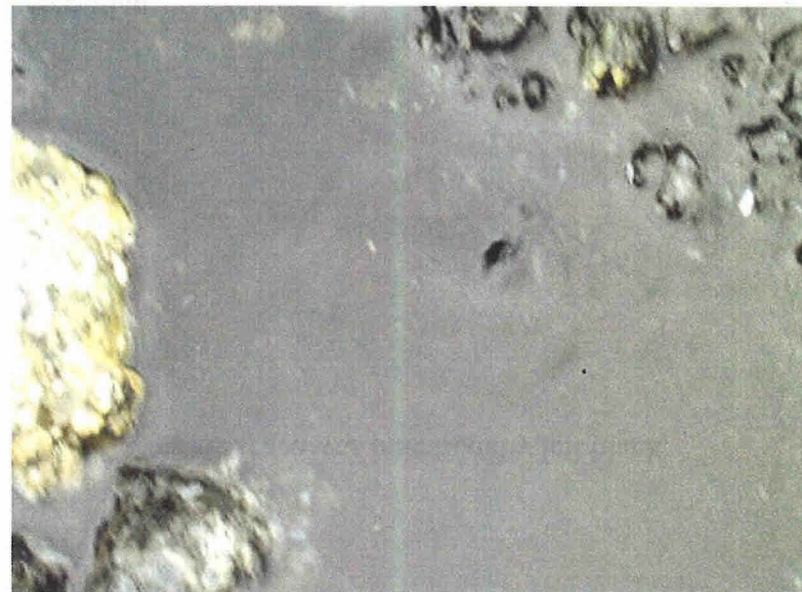


Description: START collecting sample WN05SD

Time: 15:10

Direction: West

Photo No: 0727



Description: Extreme close-up of oily product release after sampling

Time: 15:18

Direction: Down

Photo No: 0728

PHOTO DOCUMENTATION

Site: Bremerton Gasworks Targeted Brownsfield Assessment	Lat/Long: 47.578067,-122.642956	Date: 5/12/2008-5/19/2008, 6/4/2008
Location: Bremerton, WA	Camera: Sony Cybershot 73	Photographer: Bryce Robbert, WSI – Joanne LaBaw, EPA



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Description: Sample WN01SD with oily sheen

Time: 15:31

Direction: Down

Photo No: 0730

Description:

Time:

Direction:

Photo No:

B

Screening Criteria and Analytical Results

Table B-1 Soil Sample Screening Criteria

Analyte	Screening Criteria		
	MTCA - Method A ¹	EPA Regional Screening Levels - Residential ²	Selected Screening Criteria
Semivolatile Organic Compounds (µg/kg)			
Acenaphthene		3400000	3400000
Acenaphthylene			
Anthracene		17000000	17000000
Benz(a)anthracene		150	150
Benzo(a)pyrene	100	15	15
Benzo(a)pyrene Equivalents (BAPE)	100	15	15
Benzo(b)fluoranthene		150	150
Benzo(g,h,i)perylene			
Benzo(k)fluoranthene		1500	1500
Benzoic acid		240000000	240000000
benzyl alcohol		31000000	31000000
Bis(2-ethylhexyl)phthalate		35000	35000
Butyl Benzyl Phthalate		260000	260000
Chrysene		15000	15000
Dibenz(a,h)anthracene		15	15
Dibenzofuran			
Dibutyl phthalate		6100000	6100000
Diethyl phthalate		49000000	49000000
Dimethyl phthalate			
Dimethylphenol, 2,4-		1200000	1200000
Diethyl phthalate			
Fluoranthene		2300000	2300000
Fluorene		2300000	2300000
Hexachlorobenzene		300	300
Hexachlorobutadiene		6200	6200
Hexachloroethane		35000	35000
Indeno(1,2,3-cd)pyrene		150	150
Methylphenol, 2-			
Methylphenol, 4-			
Naphthalene	5000	3900	3900
Nitrosodiphenylamine, N-		99000	99000
Pentachlorophenol		3000	3000
Phenanthrene			
Phenol		18000000	18000000
Pyrene		1700000	1700000
Trimethylbenzene, 1,3,5-		47000	47000
Target Analyte List Metals (mg/kg)			
Antimony (metallic)		31	31
Arsenic, inorganic	20	0.39	0.39
Barium		15000	15000
Cadmium	2	70	2
Chromium, Total		280	280
Chromium (III) (Insoluble Salts)	2000	120000	2000
Chromium VI (particulates)	19	39	19
Copper		3100	3100
Lead and compounds	250	400	250
Mercury (elemental)		6.7	6.7
Mercury (inorganic salts)	2	23	2
Mercury			

Table B-1 Soil Sample Screening Criteria

Analyte	Screening Criteria		
	MTCA - Method A ¹	EPA Regional Screening Levels - Residential ²	Selected Screening Criteria
Nickel Soluble Salts		1600	1600
Selenium		390	390
Silver		390	390
Thallium (Soluble Salts)		5.1	5.1
Tributyltin compounds		18	18
Tributyltin oxide		18	18
Zinc (Metallic)		23000	23000
Total Petroleum Hydrocarbons (mg/kg)			
TPH as diesel	2000		2000
TPH as gasoline (benzene present)	30		30
TPH as gasoline (no benzene)	100		100
TPH-Heavy Oils	2000		2000
Volatile Organic Compounds (µg/kg)			
Acetone		61000000	61000000
Benzene	30	1100	30
Bromobenzene		94000	94000
Bromochloromethane			
Bromodichloromethane		10000	10000
Bromoform		61000	61000
Dichloropropene, 1,1-			
Trichlorobenzene, 1,2,3-			
Bromomethane		7900	7900
Butylbenzene, n-			
Butylbenzene, sec-			
Butylbenzene, tert-			
Carbon Disulfide		670000	670000
Carbon Tetrachloride		250	250
Chloroethane			
Chloroform		300	300
Chloromethane		1700	1700
Chlorotoluene, o-		1600000	1600000
Chlorotoluene, p-		5500000	5500000
Dibromo-3-chloropropane, 1,2-		5.6	5.6
Dibromochloromethane		5800	5800
Dibromomethane (Methylene Bromide)		780000	780000
Dibromomethane, 1,2-			
Dichlorobenzene, 1,2-		2000000	2000000
Dichlorobenzene, 1,3-			
Dichlorobenzene, 1,4-		2600	2600
Dichlorodifluoromethane		190000	190000
Dichloroethane, 1,1-		3400	3400
Dichloroethane, 1,1-		3400	3400
Dichloroethane, 1,2-		450	450
Dichloroethylene, 1,2-cis-		780000	780000
Dichloroethylene, 1,2-trans-		110000	110000
Dichloropropane, 1,2-		930	930
Dichloropropane, 1,3-		1600000	1600000
Dichloropropane, 2,2-			
Dichloropropene, 1,3-		1700	1700
Ethylbenzene	6000	5700	5700

Table B-1 Soil Sample Screening Criteria

Analyte	Screening Criteria		
	MTCA - Method A ¹	EPA Regional Screening Levels - Residential ²	Selected Screening Criteria
hexanone, 2-			
Isopropylbenzene			
Isopropyltoluene, 4-			
Methyl Ethyl Ketone (2-Butanone)		28000000	28000000
Methyl tertbutyl ether (MTBE)	100	39000	100
Methyl-2-pentanone, 4-			
Methylene Chloride	20	11000	20
Propylbenzene, n-			
Styrene		6500000	6500000
Tetrachloroethane, 1,1,1,2-		2000	2000
Tetrachloroethane, 1,1,2,2-		590	590
Tetrachloroethylene	50	570	50
Toluene	7000	5000000	7000
Trichlorobenzene, 1,2,4-		87000	87000
Trichloroethane, 1,1,1-	2000	9000000	2000
Trichloroethane, 1,1,2-		1100	1100
Trichloroethylene	30	2800	30
Trichlorofluoromethane		800000	800000
Trichloropropane, 1,2,3-		91	91
Trimethylbenzene, 1,2,4-		67000	67000
Vinyl Chloride		60	60
Xylene, m-		4500000	4500000
Xylene, mixture	9000	600000	9000
Xylene, o-		5300000	5300000
Xylene, p-		4700000	4700000

Note: Blank cells indicate no screening criteria is available for that method and/or analyte.

¹ MTCA Cleanup Refulations, Chapter 173-340, November 2007.

² EPA Regional Screening Levels, September 12, 2008.

Key:

EPA = United States Environmental Protection Agency.

mg/kg = milligrams per kilogram.

µg/kg = micrograms per kilogram.

MTCA = Model Toxics Control Act.

Table B-2 Groundwater Sample Screening Criteria

Table D-2 Groundwater Sample Screening Criteria					
Analyte	Screening Criteria				
	MTCA - Method A ¹	Washington MCL ²	Federal MCL ³	EPA Regional Screening Levels - Tap Water ⁴	Selected Screening Criteria
Semivolatile Organic Compounds (µg/L)					
Acenaphthene				2200	2200
Acenaphthylene					
Anthracene				11000	11000
Benz(a)anthracene				0.029	0.029
Benzo(a)pyrene	0.1	0.2		0.0029	0.0029
Benzo(a)pyrene (PAH)			0.2		0.2
Benzo(b)fluoranthene				0.029	0.029
Benzo(g,h,i)perylene					
Benzo(k)fluoranthene				0.29	0.29
Benzoic acid				150000	150000
Benzoic acid				150000	150000
benzyl alcohol				18000	18000
Bis(2-ethylhexyl)phthalate			6	4.8	4.8
Butyl Benzyl Phthalate				35	35
Chrysene				2.9	2.9
Dibenz(a,h)anthracene				0.0029	0.0029
Dibenzofuran					
Dibutyl phthalate				3700	3700
Diethyl phthalate				29000	29000
Dimethyl phthalate					
Dimethylphenol, 2,4-				730	730
Dioctyl phthalate					
Fluoranthene				1500	1500
Fluorene				1500	1500
Hexachlorobenzene			1	0.042	0.042
Hexachlorobutadiene				0.86	0.86
Hexachloroethane				4.8	4.8
Indeno(1,2,3-cd)pyrene				0.029	0.029
Methylphenol, 2-					
Methylphenol, 4-					
Naphthalene	160			0.14	0.14
Nitrosodiphenylamine, N-				14	14
Pentachlorophenol			1	0.56	0.56
Phenanthrene					
Phenol				11000	11000
Pyrene				1100	1100
Trimethylbenzene, 1,3,5-				12	12
Target Analyte List Metals (mg/L)					
Antimony (metallic)		6	6	6	6
Arsenic, inorganic	5	100	10	0.045	0.045
Barium		2000	2000	2000	2000
Cadmium	5	5	5	5	5
Chromium, Total	50	100	100	50	50
Chromium (III) (Insoluble Salts)				55000	55000
Chromium VI (particulates)					
Copper			1300	1300	1300
Lead and compounds	15	15	15	15	15
Mercury (elemental)				0.63	0.63
Mercury (inorganic salts)					
Mercury	2	2	2	2	2
Nickel Soluble Salts		100		100	100

Table B-2 Groundwater Sample Screening Criteria

Analyte	Screening Criteria				
	MTCA - Method A ¹	Washington MCL ²	Federal MCL ³	EPA Regional Screening Levels -	Selected Screening Criteria
				Tap Water ⁴	
Selenium		50	50	180	50
Silver		100 (5)	100 (4)	100	100
Thallium (Soluble Salts)		2	2	2.4	2
Tributyltin compounds				11	11
Tributyltin oxide				11	11
Zinc (Metallic)		5000 (5)	5000 (4)	5000	5000
Total Petroleum Hydrocarbons (mg/L)					
TPH as diesel	500			0.5	0.5
TPH as gasoline (benzene present)	800			0.8	0.8
TPH as gasoline (no benzene)	1000			1	1
TPH-Heavy Oils	500			0.5	0.5
Volatile Organic Compounds (µg/L)					
Acetone				22000	22000
Benzene	5	5	5	0.41	0.41
Bromobenzene				0.015	0.015
Bromochloromethane					
Bromodichloromethane				1.1	1.1
Bromoform				8.5	8.5
Dichloropropene, 1,1-					
Trichlorobenzene, 1,2,3-					
Bromomethane				8.7	8.7
Butylbenzene, n-					
Butylbenzene, sec-					
Butylbenzene, tert-					
Carbon Disulfide				1000	1000
Carbon Tetrachloride			5	0.2	0.2
Chloroethane					
Chloroform				0.19	0.19
Chloromethane				1.8	1.8
Chlorotoluene, o-				730	730
Chlorotoluene, p-				2600	2600
Dibromo-3-chloropropane, 1,2-				0.00032	0.00032
Dibromochloromethane				0.8	0.8
Dibromomethane (Methylene Bromide)				370	370
Dibromomethane, 1,2-	0.01		0.05		0.01
Dichlorobenzene, 1,2-			600	370	370
Dichlorobenzene, 1,3-					
Dichlorobenzene, 1,4-			75	0.43	0.43
Dichlorodifluoromethane				390	390
Dichloroethane, 1,1-				2.4	2.4
Dichloroethane, 1,1-				2.4	2.4
Dichloroethane, 1,2-	5		5	0.15	0.15
Dichloroethylene, 1,2-cis-			70	370	70
Dichloroethylene, 1,2-trans-			100	110	100
Dichloropropane, 1,2-			5	0.39	0.39
Dichloropropane, 1,3-				730	730
Dichloropropane, 2,2-					
Dichloropropene, 1,3-				0.43	0.43
Ethylbenzene	700	700	700	1.5	1.5
hexanone, 2-					
Isopropylbenzene					
Isopropyltoluene, 4-					

Table B-2 Groundwater Sample Screening Criteria

Analyte	Screening Criteria				
	MTCA - Method A ¹	Washington MCL ²	Federal MCL ³	EPA Regional Screening Levels - Tap Water ⁴	Selected Screening Criteria
Methyl Ethyl Ketone (2-Butanone)				7100	7100
Methyl tertbutyl ether (MTBE)	20			12	12
Methyl-2-pentanone, 4-					
Methylene Chloride	5			4.8	4.8
Propylbenzene, n-					
Styrene			100	1600	100
Tetrachloroethane, 1,1,1,2-				0.52	0.52
Tetrachloroethane, 1,1,2,2-				0.067	0.067
Tetrachloroethylene	5		5	0.11	0.11
Toluene	1000	1000	1000	2300	1000
Trichlorobenzene, 1,2,4-			70	8.2	8.2
Trichloroethane, 1,1,1-	200		200	9100	200
Trichloroethane, 1,1,2-			5	0.24	0.24
Trichloroethylene	5		5	1.7	1.7
Trichlorofluoromethane				1300	1300
Trichloropropane, 1,2,3-				0.0096	0.0096
Trimethylbenzene, 1,2,4-				15	15
Vinyl Chloride	0.2		2	0.016	0.016
Xylene, m-				1400	1400
Xylene, mixture	1000	10000	10000	200	200
Xylene, o-				1400	1400
Xylene, p-				1500	1500

Note: Blank cells indicate no screening criteria is available for that method and/or analyte.

¹ MTCA Cleanup Regulations, Chapter 173-340, November 2007.

² State Primary Maximum Contaminant Levels, Chapter 248-290-31- WAC.

³ EPA National Primary Drinking Water Standards, June 2003.

⁴ EPA Regional Screening Levels, September 12, 2008.

Key:

EPA = United States Environmental Protection Agency.

mg/kg = milligrams per kilogram.

µg/kg = micrograms per kilogram.

µg/L = micrograms per liter

MCL = Maximum Contaminant Level.

MTCA = Model Toxics Control Act.

WAC = Washington Administrative Code.

Table B-3 Sediment Sample Screening Criteria

Analyte	Screening Criteria		
	SQuiRT Marine Values Apparent Effects Threshold	Washington Sediment Quality Standard	Selected Screening Criteria
Semivolatile Organic Compounds (µg/kg)			
Acenaphthene	130	500	130
Acenaphthylene	71	560	71
Anthracene	280	960	280
Benz(a)anthracene	960	1,300	960
Benzo(a)pyrene	1,100	1,600	1,100
Benzo(b)fluoranthene	1,800		1,800
Benzo(g,h,i)perylene	670	670	670
Benzo(k)fluoranthene	1,800		1,800
Benzo(b+k)fluoranthene		3,200	3,200
Benzoic acid	65	650	65
benzyl alcohol	52	57	52
Bis(2-ethylhexyl)phthalate	1,300	1,300	1,300
Butyl Benzyl Phthalate	63	63	63
Chrysene	950	1,400	950
Dibenz(a,h)anthracene	230	230	230
Dibenzofuran	110	540	110
Dibutyl phthalate		1,400	1,400
Diethyl phthalate	6	200	6
Dimethyl phthalate	6	71	6
Dimethylphenol, 2,4-	18	29	18
Dioctyl phthalate	61	6,200	61
Fluoranthene	1,300	1,700	1,300
Fluorene	120	540	120
Hexachlorobenzene	6	22	6
Hexachlorobutadiene	1.3	11	1.3
Hexachloroethane	73		73
Indeno(1,2,3-cd)pyrene	600	600	600
Methylnaphthalene, 2-	64		64
Methylphenol, 2-		63	
Methylphenol, 4-		670	670
Naphthalene	230	2,100	230
Nitrosodiphenylamine, N-	28	28	28
Pentachlorophenol	17	360	17
Phenanthrene	660	1,500	660
Phenol	130	420	130
Pyrene	2,400	2,600	2,400
Target Analyte List Metals (mg/kg)			
Aluminum	1.8%		1.8%
Antimony (metallic)	9.3		9.3
Arsenic, inorganic	35	57	35
Barium	48		48
Cadmium	3	5.1	3
Chromium, Total	62	260	62
Copper	390	390	390
Lead and compounds	400	450	400
Manganese	260		260
Mercury	0.41	0.41	0.41
Nickel Soluble Salts	110		110
Selenium	1		1
Silver	3.1	6.1	3.1
Zinc (Metallic)	410	410	410

Table B-3 Sediment Sample Screening Criteria

Analyte	Screening Criteria		
	SQUIRT Marine Values Apparent Effects Threshold	Washington Sediment Quality Standard	Selected Screening Criteria
Total Petroleum Hydrocarbons (mg/kg)			
Volatile Organic Compounds (µg/kg)			
Acetone		61,000,000	61,000,000
Benzene		30	30
Dichlorobenzene, 1,2-	13		13
Dichlorobenzene, 1,4-	110		110
Ethylbenzene	4	5,700	4
Methylene Chloride		20	20
Tetrachloroethylene	57		57
Toluene		7,000	7,000
Trichlorobenzene, 1,2,4-	4.8		4.8
Trichloroethylene	41		41
Xylene, mixture	4		4
Xylene, o-		430,000	430,000

Note: Blank cells indicate no screening criteria is available for that method and/or analyte.
Screening values include 'apparent effects levels' for marine sediment from NOAA's SQUIRT and Washington State Sediment Quality Standards.

Key:

- EPA = United States Environmental Protection Agency.
- mg/kg = milligrams per kilogram.
- µ/kg = micrograms per kilogram.
- NOAA = National Oceanic and Atmospheric Administration
- SQUIRT = Screening Quick Reference Tables

Table B-4 Subsurface Soil Samples (0 to 5 feet bgs) Analytical Results Summary

EPA Sample ID			08204402	08204409	08204416	08204423	08204433	08204440	08204447
CLP Sample ID		Source of	J8K23	J8K30	J8K37	J8K44	J8K54	J8K61	J8K68
Station Location	Screening	Screening	MP01SB05	MP02SB05	MP03SB05	MP04SB05	SP01SB05	SP02SB05	SP03SB05
Description	Criteria	Criteria	McConkey Property				Sesko Property		
Semivolatile Organic Compounds (µg/kg)									
1,1'-Biphenyl			22 U	23 U	26 U	23 U	33 U	26 U	980
1,2,4-Trimethylbenzene	67000	EPA Regional	22 U	23 U	26 U	23 U	33 U	26 U	2600
1,3,5-Trimethylbenzene	47000	EPA Regional	22 U	23 U	26 U	23 U	33 U	26 U	5500
2-Methylnaphthalene			1100 UJ	1.1 U	26 U	5.4	1.6 U	6.2	100000
Acenaphthene	3400000	EPA Regional	1100 UJ	1.1 U	26 U	7.6	1.6 U	8.9	460 J
Acenaphthylene			1100 UJ	1.1 U	26 U	1.8	1.6 U	1.8	2400
Acetophenone			22 U	23 U	26 U	23 U	33 U	26 U	1800
Anthracene	17000000	EPA Regional	1100 UJ	1.1 U	26 U	5.6	1.6 U	6.7	320 J
Benzo(a)anthracene	150	EPA Regional	480	20 J	1.3 U	4.1	1.6 U	4.4	1600
Benzo(a)pyrene Equivalents (BAPE)	15	EPA Regional	807	86	16 U	5	1.7	6	3338
Benzo(a)pyrene	15	EPA Regional	570	68	26 U	4.1	1.1 JQ	4.8	2500
Benzo(b)fluoranthene	150	EPA Regional	430	23 J	26 U	1.8 J	1.6 UJ	2.4	1800
Benzo(g,h,i)perylene			520	1.1 U	26 U	2.8	2.2	2.6	2400
Benzo(k)fluoranthene	1500	EPA Regional	470	55	26 U	2.2 J	0.9 JQ	2.9	2200
Bis(2-ethylhexyl)phthalate	35000	EPA Regional	180 J	290	240	100	160	160	24 UJ
Carbazole			26	23 U	26 U	23 U	33 U	26 U	560
Chrysene	15000	EPA Regional	520	35	1.3 U	5.2	1.1 JQ	5.9	3900
Dibenzo(a,h)anthracene	15	EPA Regional	1100 U	20 J	1.3 U	1.9	1.5 JQ	1.3 J	780
Dibenzofuran			22 U	23 U	26 U	23 U	33 U	26 U	63 J
Fluoranthene	2300000	EPA Regional	1100	2.3	26 U	9.1	1.6 U	10	12000 J
Fluorene	2300000	EPA Regional	1100 UJ	1.1 U	26 U	5	1.6 U	6	4600
Indeno(1,2,3-cd)pyrene	150	EPA Regional	390	55	1.3 U	2.6	1.9	2.2	2000
Naphthalene	3900	EPA Regional	670 JQ	1.1 U	26 U	270000	1.6 JQ	1.4 U	1.9 U
Phenanthrene			600 J	1.3	1.3 U	17 J	1.6 U	21 J	40000
Pyrene	1700000	EPA Regional	1400	3.5	1.3 U	16	1 JQ	15 J	12000 J
Target Analyte List Metals (mg/kg)									
Aluminum			11200 J	14600	19300	13400 J	16500 J	24100 J	14900
Antimony	31	EPA Regional	R	0.77 JQ	R	R	R	R	7.2 UJ
Arsenic	0.39	EPA Regional	1.08	1.2	4.0	1.46	2.08	2.04	4.17
Barium	15000	EPA Regional	46.1 J	64.5	113	57.4 J	70.4 J	120 J	71.3
Cadmium	2	MTCA- Method A	0.27 JQ	0.55 U	0.63 U	0.48 JQ	0.51 JQ	0.74	1.2
Calcium			3200	1620	5200	4070	3490	3180	7440
Chromium	280	EPA Regional	20.4	22.4	49.3	26.6	33	43.1	28.1 J
Cobalt			5.8	6.6	14.8	9.2	9.2	11.1	10.3
Copper	3100	EPA Regional	11.1	13	36.3	16.9	19.7	26.3	45.7
Iron			10900 J	13500	28500	17800 J	18400 J	24800 J	24300

Table B-4 Subsurface Soil Samples (0 to 5 feet bgs) Analytical Results Summary

EPA Sample ID			08204402	08204409	08204416	08204423	08204433	08204440	08204447
CLP Sample ID		Source of	J8K23	J8K30	J8K37	J8K44	J8K54	J8K61	J8K68
Station Location	Screening	Screening	MP01SB05	MP02SB05	MP03SB05	MP04SB05	SP01SB05	SP02SB05	SP03SB05
Description	Criteria	Criteria	McConkey Property			Sesko Property			
Lead	250	MTCA- Method A	5.6 J	3.7	6.3	2.4 J	2.4 J	4.4 J	31.2
Magnesium			3750 J	4210	8650	4930 J	5120 J	5720 J	5130
Manganese			193 J	225	526	375 J	289 J	307 J	388
Nickel	1600	EPA Regional	30.1 J	35.5	65.7	36.8 J	40.4 J	41.6 J	60.9
Potassium			462 JQ	355 JQ	844	531 JQ	505 JQ	404 JQ	563 JQ
Thallium	5.1	EPA Regional	2.2 JQ	2.8 U	3.2 U	3	3.4	4.1	3
Vanadium			26.5	31.3	61.7	40.2	44.7	62.6	54.1
Zinc	23000	EPA Regional	23.6 J	25.3 J	56.3 J	35.1 J	34.3 J	55.9 J	114
Total Petroleum Hydrocarbons (mg/kg)									
Diesel Range Organics	2000	MTCA- Method A	25 U	25 U	25 U	1800	25 U	25 U	100 U
Oil & Grease	2000	MTCA- Method A	110	18	50 U	98 U	50 U	50 U	4700 J
Volatile Organic Compounds (µg/kg)									
1,2,3-Trichlorobenzene			7.2 U	5.7 U	1.3 U	5 U	0.14 JQ	6.8 U	580 U
1,2,4-Trichlorobenzene	87000	EPA Regional	7.2 U	5.7 U	1.3 U	5 U	0.23 JQ	6.8 U	580 U
Acetone	61000000	EPA Regional	26	5.7 U	6.3 U	28	55	36	1200 U
Benzene	30	MTCA- Method A	1.4 U	1.1 U	1.3 U	1 U	2.2	1.4 U	4800
Ethylbenzene	5700	EPA Regional	1.4 U	1.1 U	1.3 U	86 J	2.1 U	1.4 U	3600
Isopropylbenzene			1.4 U	1.1 U	1.3 U	7.8	2.1 U	1.4 U	130
o-Xylene	5300000	EPA Regional	1.4 U	1.1 U	1.3 U	94 J	2.1 U	1.4 U	3400
Tetrachloroethene	50	MTCA- Method A	1.4 U	1.1 U	1.3 U	1 U	0.59 J	1.4 U	580 U
Toluene	7000	MTCA- Method A	1.4 JQ	1.1 U	1.3 U	4.8	0.84 JQ	1.6	7700
Trichlorofluoromethane	800000	EPA Regional	1.4 U	1.1 U	1.3 U	1 U	1.9 JQ	3.2	580 U

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.
 BAPE calculated according to MTCA TEFs; assuming nondetect analytes present at one-half the detection limit.

Key:

bgs = below ground surface.
 CLP = Contract Laboratory Program.
 EPA = United States Environmental Protection Agency.
 ID = Identification.
 J = The analyte was positively identified. The associated numerical result is an estimate.
 µg/kg = micrograms per kilogram.
 mg/kg = milligrams per kilogram.
 NA = The analyte was not analyzed for.
 Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.
 R = The data are unusable for all purposes.
 U = The analyte was not detected at or above the reported result.

Table B-5 Subsurface Soil Samples (5 to 10 feet bgs) Analytical Results Summary

EPA Sample ID			08204403	08204410	08204417	08204424	08204434	08204441	08204448
CLP Sample ID			J8K24	J8K31	J8K38	J8K45	J8K55	J8K62	J8K69
Station Location			MP01SB10	MP02SB10	MP03SB10	MP04SB10	SP01SB10	SP02SB10	SP03SB10
Description	Screening Criteria	Source of Screening Criteria	McConkey Property				Sesko Property		
Semivolatile Organic Compounds (µg/kg)									
1,1'-Biphenyl			22 U	23 U	22 U	23 U	24 U	26 U	65 J
2-Methylnaphthalene			1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	200
Acenaphthene	3400000	EPA Regional	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	53
Acenaphthylene			1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1400
Anthracene	17000000	EPA Regional	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	2800
Benzo(a)anthracene	150	EPA Regional	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	14000 J
Benzo(a)pyrene Equivalents (BAPE)	15	EPA Regional	1.1	0.8 U	0.8 U	1.5	1.0	1	47510
Benzo(a)pyrene	15	EPA Regional	0.69 JQ	1.1 U	1.1 U	1 JQ	1.2 U	26 U	36000
Benzo(b)fluoranthene	150	EPA Regional	1.1 UJ	1.1 U	1.1 U	1.1 UJ	1.2 UJ	1.3 U	15000 J
Benzo(g,h,i)perylene			1.5	1.1 U	1.1 U	1.7	1.7	1.3	83000
Benzo(k)fluoranthene	1500	EPA Regional	1.1 UJ	1.1 U	1.1 U	0.56 JQ	1.2 UJ	1.3 U	13000 J
Bis(2-ethylhexyl)phthalate	35000	EPA Regional	82	120	82	100	96	170	31 UJ
Carbazole			22 U	23 U	22 U	23 U	24 U	26 U	120 J
Chrysene	15000	EPA Regional	0.59 JQ	1.1 U	1.1 U	0.73 JQ	1.2 U	1.3 U	16000 J
Dibenzo(a,h)anthracene	15	EPA Regional	1.2	1.1 U	1.1 U	1.4	1.2 JQ	0.94 JQ	4500
Dibenzofuran			22 U	23 U	22 U	23 U	24 U	26 U	63
Fluoranthene	2300000	EPA Regional	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	35000 J
Fluorene	2300000	EPA Regional	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	450 J
Indeno(1,2,3-cd)pyrene	150	EPA Regional	1.4	1.1 U	1.1 U	1.6	1.3	1 JQ	67000
Naphthalene	3900	EPA Regional	1.3 U	1.2 U	1.1 U	1.1 U	0.62 JQ	1.8 U	68000 J
Phenanthrene			1.1 U	1.1 U	1.1 U	0.83 JQ	1.2 U	1.3 U	8300
Pyrene	1700000	EPA Regional	0.6 JQ	1.1 U	1.1 U	0.75 JQ	1.2 U	1.3 U	22000 J
Target Analyte List Metals (mg/kg)									
Aluminum			11200 J	11500	7670	8050 J	10700 J	20600 J	5780
Antimony	31	EPA Regional	R	R	R	R	R	R	1.2 JQ
Arsenic	0.39	EPA Regional	1.98	0.82	0.86	0.8	1.13	3.71	7.85
Barium	15000	EPA Regional	45.7 J	43.1	43.6	0.24 J	44.6 J	103 J	74.1
Cadmium	2	MTCA-Method A	0.31 JQ	0.55 U	0.54 U	0.24 JQ	0.36 JQ	0.94	1.6
Calcium			3300	1840	2960	3050	3740	6400	21300
Chromium	280	EPA Regional	20.5	19.8	18.9	21.6	26	51.8	59.9 J
Cobalt			6.6	5.7	5.7	5.5	7.8	17.3	3.3 JQ
Copper	3100	EPA Regional	14.4	10.4	10.3	11.2	14.2	42.8	62.7
Iron			13400 J	11200	11300	11200 J	15100 J	34300 J	47800
Lead	250	MTCA-Method A	1.3 J	2.5	4.3	0.55 JQ	1.2 J	4.4 J	128
Magnesium			4600 J	3810	3410	3960 J	4580 J	8930 J	1380
Manganese			274 J	201	244	197 J	276 J	627 J	215
Nickel	1600	EPA Regional	30.5 J	31.8	29.7	32.5 J	34.1 J	57.8 J	28.4
Potassium			465 JQ	372 JQ	294 JQ	371 JQ	431 JQ	1090	233 JQ
Thallium	5.1	EPA Regional	2.2 JQ	2.8 U	1.1 JQ	1.8 JQ	2.8	5	4.1 U
Vanadium			31.7	23.3	25.1	25.3	35.4	85.3	30.2
Zinc	23000	EPA Regional	24 J	21 J	21.8 J	22.3 J	29 J	66.4 J	376

Table B-5 Subsurface Soil Samples (5 to 10 feet bgs) Analytical Results Summary

EPA Sample ID			08204403	08204410	08204417	08204424	08204434	08204441	08204448
CLP Sample ID		Source of	J8K24	J8K31	J8K38	J8K45	J8K55	J8K62	J8K69
Station Location	Screening	Screening	MP01SB10	MP02SB10	MP03SB10	MP04SB10	SP01SB10	SP02SB10	SP03SB10
Description	Criteria	Criteria	McConkey Property				Sesko Property		
Total Petroleum Hydrocarbons (mg/kg)									
Diesel Range Organics	2000	MTCA-Method A	25 U	25 U	25 U	25 U	25 U	25 U	36000 J
Oil & Grease	2000	MTCA-Method A	50 U	50 U	50 U	50 U	50 U	50 U	29000 J
Volatile Organic Compounds (µg/kg)									
Acetone	61000000	EPA Regional	11	6.2 U	4.6 U	13	31	25	14000 U
Benzene	30	MTCA-Method A	1.3 U	1.2 U	0.91 U	1.5 U	2	1.4 JQ	12000
Ethylbenzene	5700	EPA Regional	1.3 U	1.2 U	0.91 U	1.5 U	1.1 U	1.8 U	24000
Isopropylbenzene			1.3 U	1.2 U	0.91 U	1.5 U	1.1 U	1.8 U	1600
Methylene chloride	20	MTCA-Method A	0.58 J	2.7 U	0.91 U	1.5 U	1.1 U	1.8 U	1400 U
o-Xylene	5300000	EPA Regional	1.3 U	1.2 U	0.91 U	1.5 U	1.1 U	1.8 U	55000
Toluene	7000	MTCA-Method A	0.38 JQ	1.2 U	0.26 U	1.5 U	0.57 JQ	1.8 U	3300

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

- bgs = below ground surface.
- CLP = Contract Laboratory Program.
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- mg/kg = milligrams per kilogram.
- µg/kg = micrograms per kilogram.
- MTCA = Model Toxic Control Act
- NA = The analyte was not analyzed for.
- Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.
- R = The data are unusable for all purposes.
- U = The analyte was not detected at or above the reported result.

Table B-6 Subsurface Soil Samples (10 to 15 feet bgs) Analytical Results Summary

EPA Sample ID			08204404	08204411	08204425	08204435	08204442	08204449
CLP Sample ID			J8K25	J8K32	J8K46	J8K56	J8K63	J8K70
Station Location			MP01SB15	MP02SB15	MP04SB15	SP01SB15	SP02SB15	SP03SB15
Description			Screening Criteria	Screening Criteria	McConkey Property		Sesko Property	
Semivolatile Organic Compounds (µg/kg)								
1,3,5-Trimethylbenzene	47000	EPA Regional	22 U	22 U	NA	24 U	26 U	41
2,4-Dimethylphenol	1200000	EPA Regional	22 U	22 U	NA	24 U	26 U	31
2-Methylnaphthalene			1 U	1.1 U	NA	3.1 J	1.3 U	350
Acenaphthene	3400000	EPA Regional	1 U	1.1 U	NA	4.7 J	1.3 U	12
Acenaphthylene			1 U	1.1 U	NA	1.2 UJ	0.91 JQ	110
Anthracene	17000000	EPA Regional	1 U	1.1 U	NA	4.1 J	0.86 JQ	18 JQ
Benzo(a)anthracene	150	EPA Regional	1 U	1.1 U	NA	2.2 J	3.5	30
Benzo(a)pyrene Equivalents (BAPE)	15	EPA Regional	0.94	0.83	NA	3.7	4.3	41
Benzo(a)pyrene	15	EPA Regional	0.53 JQ	1.1 U	NA	2.7 J	3.3	32
Benzo(b)fluoranthene	150	EPA Regional	1.1 UJ	1.1 U	NA	1.2 UJ	1.5	18
Benzo(g,h,i)perylene			1.4	0.71 JQ	NA	3.7 J	2	13
Benzo(k)fluoranthene	1500	EPA Regional	1.1 UJ	1.1 U	NA	1.6 J	1.9	22
Bis(2-ethylhexyl)phthalate	35000	EPA Regional	100	150	NA	120	240	100
Carbazole			22 U	22 U	NA	24 U	26 U	26
Chrysene	15000	EPA Regional	1 U	1.1 U	NA	3.1 J	5.1	48
Dibenzo(a,h)anthracene	15	EPA Regional	1.1	1.1 U	NA	2.3 J	0.99 JQ	2.8 J
Fluoranthene	2300000	EPA Regional	1 U	1.1 U	NA	5.3 J	4.9	61
Fluorene	2300000	EPA Regional	1 U	1.1 U	NA	3.4 J	1.3 U	72
Indeno(1,2,3-cd)pyrene	150	EPA Regional	1.3	1.1 U	NA	3 J	1.6	9.8
Naphthalene	3900	EPA Regional	0.61 JQ	0.59 JQ	NA	3 J	1.3 U	9500
Phenanthrene			22 U	1.1 U	NA	11 J	2.3	160
Pyrene	1700000	EPA Regional	1 U	1.1 U	NA	7.3 J	8.3	78
Styrene	6500000	EPA Regional	1.4 U	1.4 U	NA	1.2 U	1.3 U	1.5
Target Analyte List Metals (mg/kg)								
Aluminum			7360 J	8700	16500 J	8370 J	20100 J	14700
Antimony	31	EPA Regional	R	R	R	R	R	6 UJ
Arsenic	0.39	EPA Regional	0.87	0.49	2.04	1.78	2.7 U	0.87
Barium	15000	EPA Regional	31.8 J	35.4	83.1 J	43.4 J	100 J	63.9
Cadmium	2	MTCA-Method A	0.22 JQ	0.53 U	0.74	0.3 JQ	0.94	0.6
Calcium			3040	2250	6730	3270	6310	4410
Chromium	280	EPA Regional	18.9	17.9	42.6	29.1	48.7	32 J
Cobalt			5.7	5.4	13.3	9.1	15.7	11.9
Copper	3100	EPA Regional	9.8	9.1	33.4	15	40.9	24.6
Iron			10900 J	10700	27100 J	13800 J	32800 J	21000
Lead	250	MTCA-Method A	1 JQ	2.1	3.6 J	1.2 U	4.3 J	2.8
Magnesium			4290 J	4140	8530 J	4430 J	8710 J	5520
Manganese			202 J	194	530 J	341 J	557 J	339
Nickel	1600	EPA Regional	34.3 J	32.7	50.8 J	42.5 J	56.7 J	40.2
Potassium			411 JQ	366 JQ	1110	407 JQ	1080	587
Thallium	5.1	EPA Regional	1.7 JQ	2.7 U	4.3	2.4 JQ	4.7	3.9

Table B-6 Subsurface Soil Samples (10 to 15 feet bgs) Analytical Results Summary

EPA Sample ID			08204404	08204411	08204425	08204435	08204442	08204449
CLP Sample ID			J8K25	J8K32	J8K46	J8K56	J8K63	J8K70
Station Location		Source of	MP01SB15	MP02SB15	MP04SB15	SP01SB15	SP02SB15	SP03SB15
Description	Screening Criteria	Screening Criteria	McConkey Property			Sesko Property		
Vanadium			23.7	24.8	61.2	31.5	75.1	47.2
Zinc	23000	EPA Regional	21.5 J	19.6 J	53.7 J	26.2 J	63.9 J	44.3
Total Petroleum Hydrocarbons (mg/kg)								
Gasoline Range Organics	30	MTCA-Method A	7 U	6 U	6 U	5 U	7 U	10
Oil & Grease	2000	MTCA-Method A	50 U	50 U	50 U	50 U	52	50 U
Volatile Organic Compounds (µg/kg)								
Acetone	61000000	EPA Regional	7.1 U	6.8 U	NA	40	9.4	47
Benzene	30	MTCA-Method A	1.4 U	1.4 U	NA	1.2 JQ	1.2 JQ	1.6
Ethylbenzene	5700	EPA Regional	6.7	1.4 U	NA	1.2 U	1.3 U	10
Isopropylbenzene			1.7	1.4 U	NA	1.2 U	1.3 U	0.94 JQ
o-Xylene	5300000	EPA Regional	11	1.4 U	NA	1.2 U	1.3 U	14
Trichlorofluoromethane	800000	EPA Regional	1.4 U	1.4 U	NA	0.94 JQ	1.5	1.3 U

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

- bgs = below ground surface.
 CLP = Contract Laboratory Program.
 EPA = United States Environmental Protection Agency.
 ID = Identification.
 J = The analyte was positively identified. The associated numerical result is an estimate.
 µg/kg = micrograms per kilogram.
 mg/kg = milligrams per kilogram.
 NA = The analyte was not analyzed for.
 Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.
 R = The data are unusable for all purposes.
 U = The analyte was not detected at or above the reported result.

Table B-7 Subsurface Soil Samples (15 to 20 feet bgs) Analytical Results Summary

EPA Sample ID			08204405	08204412	08204419	08204428	08204436	08204443	08204450
CLP Sample ID		Source of	J8K33	J8K33	J8K40	J8K49	J8K57	J8K64	J8K71
Station Locaiton	Screening	Screening	MP01SB20	MP02SB20	MP03SB20	MP04SB20	SP01SB20	SP02SB20	SP03SB20
Description	Criteria	Criteria	McConkey Property				Sesko Property		
Semivolatile Organic Compounds (µg/kg)									
1,3,5-Trimethylbenzene	47000	EPA Regional	21 U	24 U	25 U	22 U	25 U	26 U	26
2-Methylnaphthalene			1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U	160
Anthracene	17000000	EPA Regional	1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U	2.1
Benzo(a)anthracene	150	EPA Regional	1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 UJ	3
Benzo(a)pyrene Equivalents (BAPE)	15	EPA Regional	1.2	0.91 U	0.91 U	1.1	0.91 U	1.0	4.6
Benzo(a)pyrene	15	EPA Regional	0.74 JQ	1.2 U	1.2 U	0.65 JQ	1.2 U	1.3 UJ	3.5
Benzo(b)fluoranthene	150	EPA Regional	1.1 UJ	1.2 U	1.2 U	1.1 UJ	1.2 U	1.3 UJ	2.5
Benzo(g,h,i)perylene			1.9	1.2 U	1.2 U	1.3	0.77 JQ	1.3 J	2.3
Benzo(k)fluoranthene	1500	EPA Regional	1.1 UJ	1.2 U	1.2 U	1.1 UJ	1.2 U	1.3 UJ	2.8
Bis(2-ethylhexyl)phthalate	35000	EPA Regional	75	180	160	82	180	110	110
Chrysene	15000	EPA Regional	1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 UJ	4.8
Dibenzo(a,h)anthracene	15	EPA Regional	1.6	1.2 U	1.2 U	1.1	1.2 U	0.8 JQ	1.3 U
Fluoranthene	2300000	EPA Regional	1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U	7.1
Fluorene	2300000	EPA Regional	1 U	1.2 U	1.2 U	1.1 U	1.2 U	0.7 JQ	4
Indeno(1,2,3-cd)pyrene	150	EPA Regional	1.8	1.2 U	1.2 U	1.3	1.2 U	0.87 JQ	1.6
Naphthalene	3900	EPA Regional	0.58 JQ	1.3 U	1.1 U	1.0 JQ	1.2 U	1.1 U	96 J
Phenanthrene			1 U	1.2 U	1.2 U	0.61 JQ	0.74 JQ	1.3 U	12
Phenol	18000000	EPA Regional	21 U	24 U	25 U	22 U	25 U	26 U	39
Pyrene	1700000	EPA Regional	1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 UJ	9.7
Target Analyte List Metals (mg/kg)									
Aluminum			6760 J	8120	12200	8950 J	20500 J	20800 J	18200
Antimony	31	EPA Regional	R	R	R	R	R	R	7.5 UJ
Arsenic	0.39	EPA Regional	0.77	0.50	0.97	1.01	1.52	1.39	3.89
Barium	15000	EPA Regional	30.1 J	36.9	51.5	35.7 J	88.6 J	95.6 J	94
Cadmium	2	MTCA-Method A	0.22 JQ	0.56 U	0.59 U	0.25 JQ	0.86	0.96	0.91
Calcium			3030	2070	2770	2740	6940	7290	7080
Chromium	280	EPA Regional	18	18.3	22.5	19.2	50.9	60.8	48.3 J
Cobalt			5.5	5.5 JQ	7.2	5.5 JQ	15.7	16.9	14.1
Copper	3100	EPA Regional	10.3	9.1	13.8	11.7	41.6	46.4	41.2
Iron			10400 J	9940	15000	11700 J	29600 J	32400 J	33000
Lead	250	MTCA-Method A	0.72 JQ	2	3.3	0.83 JQ	4.7 J	4.8 J	4.5
Magnesium			4440 J	3640	4590	4100 J	9510 J	11400 J	9970
Manganese			198 J	189	261	208 J	421 J	449 J	824
Nickel	1600	EPA Regional	34.5 J	32.7	35	31 J	58.2 J	56 J	52.9
Potassium			393 JQ	383 JQ	542 JQ	400 JQ	1280	1350	1240
Thallium	5.1	EPA Regional	1.5 JQ	2.8 U	1.2 JQ	1.9 JQ	4.5	5	5.1
Vanadium			22.7	20.7	34.2	24.9	69.9	86	73.4
Zinc	23000	EPA Regional	20.6 J	19.9 J	27.6 J	23.1 J	69.2 J	72.3 J	62.7
Total Petroleum Hydrocarbons (mg/kg)									
Gasoline Range Organics	30	MTCA-Method A	7 U	6 U	6 U	6 U	5 U	6 U	9

Table B-7 Subsurface Soil Samples (15 to 20 feet bgs) Analytical Results Summary

EPA Sample ID	CLP Sample ID	Station Location	Description	Screening Criteria	Source of Screening Criteria	08204405	08204412	08204419	08204428	08204436	08204443	08204450
						J8K33	J8K33	J8K40	J8K49	J8K57	J8K64	J8K71
						MP01SB20	MP02SB20	MP03SB20	MP04SB20	SP01SB20	SP02SB20	SP03SB20
							McConkey Property			Sesko Property		
Volatile Organic Compounds (µg/kg)												
Acetone	61000000	EPA Regional	6.3 U	17	6.5	9.7	6.5 U	27	24 J			
Benzene	30	MTCA-Method A	1.3 U	1.3 U	1.1 UJ	1.3 U	0.85 JQ	0.88 JQ	6.4 J			
Ethylbenzene	5700	EPA Regional	1.3 U	1.3 U	1.1 UJ	1.3 U	1.3 U	1.1 U	6.1 J			
o-Xylene	5300000	EPA Regional	1.3 U	1.3 U	1.1 UJ	1.3 U	1.3 U	1.1 U	6.5 J			
Styrene	6500000	EPA Regional	1.3 U	1.3 U	1.1 UJ	1.3 U	1.3 U	1.1 U	3 J			
Toluene	7000	MTCA-Method A	0.46 JQ	1.3 U	0.99 JQ	0.47 JQ	1.2 JQ	0.6 JQ	1 J			
Trichlorofluoromethane	800000	EPA Regional	1.3 U	1.3 U	1.1 U	1.3 U	1.8	0.88 JQ	1.2 UJ			

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

- bgs = below ground surface.
- CLP = Contract Laboratory Program.
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- µg/kg = micrograms per kilogram.
- mg/kg = milligrams per kilogram.
- Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.
- R = The data are unusable for all purposes.
- U = The analyte was not detected at or above the reported result.

Table B-8 Subsurface Soil Samples (20 to 25 feet bgs) Analytical Results Summary

EPA Sample ID			08204406	08204413	08204427	08204444	08204451
CLP Sample ID			J8K27	J8K43	J8K48	J8K65	J8K72
Station Location		Source of	MP01SB25	MP02SB25	MP04SB25	SP02SB25	SP03SB25
Description	Screening	Screening		McConkey Property		Sesko Property	
	Criteria	Criteria					
Semivolatile Organic Compounds (µg/kg)							
2-Methylnaphthalene			1.2 U	1.1 U	5.3	1.1 U	26 U
Anthracene	17000000	EPA Regional	1.2 U	1.1 U	1.4	1.1 U	1.3 U
Benzo(a)anthracene	150	EPA Regional	1.2 U	1.1 U	2.2	1.1 U	1.3 U
Benzo(a)pyrene Equivalents (BAPE)	15	EPA Regional	0.97	0.8 U	14	3.7	15
Benzo(a)pyrene	15	EPA Regional	1.2 U	1.1 U	25 U	3.4	15
Benzo(b)fluoranthene	150	EPA Regional	1.2 UJ	1.1 U	1.4 J	1.1 U	1.3 U
Benzo(g,h,i)perylene			1.1 JQ	1.1 U	2.9	1.1 U	1.3 U
Benzo(k)fluoranthene	1500	EPA Regional	1.2 UJ	1.1 U	1.6 J	1.1 U	1.3 U
Bis(2-ethylhexyl)phthalate	35000	EPA Regional	93	130	240	200	140
Butylbenzylphthalate	260000	EPA Regional	24 U	15 J	25 U	23 U	26 U
Chrysene	15000	EPA Regional	1.2 U	1.1 U	3	1.1 U	2.3
Dibenzo(a,h)anthracene	15	EPA Regional	0.88 JQ	1.1 U	2.6	1.1 U	1.3 U
Fluoranthene	2300000	EPA Regional	1.2 U	1.1 U	3.6	1.1 U	3
Indeno(1,2,3-cd)pyrene	150	EPA Regional	1 JQ	1.1 U	2.8	1.1 U	1.3 U
Naphthalene	3900	EPA Regional	0.72 JQ	1.1 U	1.2 U	2.8	1.6 U
Phenanthrene			1.2 U	1.1 U	5.3	1.1 U	2.4
Phenol	18000000	EPA Regional	24 U	22 U	25 U	23 U	81
Pyrene	1700000	EPA Regional	1.2 U	1.1 U	4.8	1.1 U	4.3
Target Analyte List Metals (mg/kg)							
Aluminum			9680 J	7850	20300 J	7280 J	19600
Antimony	31	EPA Regional	R	R	R	R	7.6 UJ
Arsenic	0.39	EPA Regional	1.03	0.77	3.64	1.17	2.47
Barium	15000	EPA Regional	37.9 J	35.1	91.2 J	34.4 J	101
Cadmium	2	MTCA-Method A	0.3 JQ	0.54 U	0.87	0.2 JQ	0.88
Calcium			3210	2130	6740	3180	7250
Chromium	280	EPA Regional	20.3	16.8	48.4	20.1	46.2 J
Cobalt			6.5	5.5	19	5.6 JQ	15.5
Copper	3100	EPA Regional	10.7	8.3	43.1	11.6	43.7
Iron			12800 J	10100	31700 J	11700 J	32400
Lead	250	MTCA-Method A	0.8 JQ	2.1	4.5 J	0.66 JQ	4.7
Magnesium			4610 J	3770	9430 J	5050 J	12200
Manganese			177 J	193	597 J	192 J	520
Nickel	1600	EPA Regional	36.9 J	32.8	66.3 J	33.5 J	56.5

B-18

Table B-8 Subsurface Soil Samples (20 to 25 feet bgs) Analytical Results Summary

EPA Sample ID			08204406	08204413	08204427	08204444	08204451
CLP Sample ID		Source of	J8K27	J8K43	J8K48	J8K65	J8K72
Station Location	Screening	Screening	MP01SB25	MP02SB25	MP04SB25	SP02SB25	SP03SB25
Description	Criteria	Criteria	McConkey Property		Sesko Property		
Potassium			398 JQ	387 JQ	1240	370 JQ	1570
Thallium	5.1	EPA Regional	2.4 JQ	2.7 U	4.5	2.3 JQ	4.6
Vanadium			30.1	22.3	69.3	24	70.4
Zinc	23000	EPA Regional	23.6 J	19.1 J	68.2 J	34.7 J	65.7
Volatile Organic Compounds (µg/kg)							
2-Butanone			6.3 U	5.7 U	6.1 U	6 U	15
Acetone	61000000	EPA Regional	21	16	6.1 U	50	64
Benzene	30	MTCA-Method A	1.3 U	1.1 U	1.2 U	0.69 JQ	180
Carbon disulfide	670000	EPA Regional	1.3 U	1.1 U	1.2 U	1.2 U	5.9
Methylene chloride	20	MTCA-Method A	1.3 U	1.3 U	1.2 U	1.2 U	3.6
Toluene	7000	MTCA-Method A	1.2 JQ	1.1 U	1.2 U	1.2 U	2.1
Trichlorofluoromethane	800000	EPA Regional	1.3 U	1.1 U	1.2 U	0.84 JQ	1.9

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

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 EPA = United States Environmental Protection Agency.
 ID = Identification.
 J = The analyte was positively identified. The associated numerical result is an estimate.
 µg/kg = micrograms per kilogram.
 mg/kg = milligrams per kilogram.
 NA = The analyte was not analyzed for.
 Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.
 R = The data are unusable for all purposes.
 U = The analyte was not detected at or above the reported result.

Table B-9 Subsurface Soil Samples (25 to 30 feet bgs) Analytical Results Summary

EPA Sample ID			08204407	08204414	08204445	08204452
CLP sample ID			J8K28	J8K35	J8K66	J8K73
Station Location			MP01SB30	MP02SB30	SP02SB30	SP03SB30
Description	Screening Criteria	Source of Screening Criteria	McConkey Property		Sesko Property	
Semivolatile Organic Compounds (µg/kg)						
2-Methylnaphthalene			1.1 U	1.1 U	1.2 U	3.4
Benzo(a)anthracene	150	EPA Regional	1.1 U	3.8	1.2 U	2.6 J
Benzo(a)pyrene Equivalents (BAPE)	15	EPA Regional	0.93	9.5	2.0 U	14
Benzo(a)pyrene	15	EPA Regional	0.56 JQ	7.7	1.2 U	13 J
Benzo(b)fluoranthene	150	EPA Regional	1.1 UJ	4.5	1.2 U	2.3
Benzo(g,h,i)perylene			1.2	5	1.2 U	2.3 J
Benzo(k)fluoranthene	1500	EPA Regional	1.1 UJ	4.7	1.2 U	2.7 J
Bis(2-ethylhexyl)phthalate	35000	EPA Regional	83	100	240	150
Chrysene	15000	EPA Regional	0.67 JQ	6.9	1.2 U	4.3 J
Dibenzo(a,h)anthracene	15	EPA Regional	0.92 J	1.1 U	1.2 U	1.3 U
Fluoranthene	2300000	EPA Regional	0.68 JQ	2.1	1.2 U	1.3 U
Indeno(1,2,3-cd)pyrene	150	EPA Regional	1.1	3.5	24 U	1.6 J
Naphthalene	3900	EPA Regional	1.3	1.1 U	1.9 U	2.5 U
Pyrene	1700000	EPA Regional	0.81 JQ	3.5	1.2 U	9.5 J
Target Analyte List Metals (mg/kg)						
Aluminum			11300 J	7240	7380	22000
Antimony	31	EPA Regional	R	R	7.3 UJ	7.7 UJ
Arsenic	0.39	EPA Regional	1.62	0.68	1.28	2.53
Barium	15000	EPA Regional	37.8 J	33.5	28.5	110
Cadmium	2	MTCA-Method A	0.48 JQ	0.53 U	0.23 JQ	1.1
Calcium			5310	2040	3640	7940
Chromium	280	EPA Regional	36.4	16	18.9 J	53.3 J
Cobalt			10.1	5 JQ	5.4 JQ	17.3
Copper	3100	EPA Regional	25.3	8	9.5	52.1
Iron			18500 J	9570	11100	36500
Lead	250	MTCA-Method A	1.3 J	1.8	0.6 JQ	5.2
Magnesium			5920 J	3520	4600	14300
Manganese			401 J	173	170	662
Nickel	1600	EPA Regional	30.6 J	31.4	32.3	62.2
Potassium			376 JQ	361 JQ	401 JQ	1900
Thallium	5.1	EPA Regional	2.6 JQ	2.7 U	1.8 JQ	5.5
Vanadium			45.9	20.8	25.4	77.8
Zinc	23000	EPA Regional	34.2 J	18.9 J	22.3	76.7
Volatile Organic Compounds (µg/kg)						
Acetone	61000000	EPA Regional	9.5	16	28	47
Benzene	30	MTCA-Method A	1.1 U	1.1 U	1.9 U	44
Carbon disulfide	670000	EPA Regional	1.1 U	1.1 U	1.9 U	4.3
Methylene chloride	20	MTCA-Method A	1.1 U	1.1 J	1.9 U	2.3 U
Toluene	7000	MTCA-Method A	0.48 JQ	1.1 U	1.9 U	2.1
Trichlorofluoromethane	800000	EPA Regional	1.1 U	1.1 U	1.9 U	2.4

Note: Bold type indicates the sample result is above the instrument detection limit.
Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

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- U = The analyte was not detected at or above the reported result.

Table B-10 Subsurface Soil Samples (30 to 35 feet bgs) Analytical Results Summary

EPA Sample ID			08204468	08204463
CLP Sample ID		Source of	J8K84	J8K79
Station Location	Screening	Screening	MP01SB35	SP03SB35
Description	Criteria	Criteria	McConkey Property	Sesko Property
Semivolatile Organic Compounds (µg/kg)				
2-Methylnaphthalene			1.2 UJ	5.9
Benzo(a)anthracene	150	EPA Regional	1.2 U	3.2
Benzo(a)pyrene Equivalents (BAPE)	15	EPA Regional	0.99	11
Benzo(a)pyrene	15	EPA Regional	1.2 U	10
Benzo(b)fluoranthene	150	EPA Regional	1.2 UJ	2.7
Benzo(g,h,i)perylene			1.2 JQ	2.5
Benzo(k)fluoranthene	1500	EPA Regional	1.2 UJ	2.9
Bis(2-ethylhexyl)phthalate	3500	EPA Regional	250	100
Butylbenzylphthalate	260000	EPA Regional	29	26 UJ
Chrysene	15000	EPA Regional	0.67 JQ	4.9
Di-n-butylphthalate	6100000	EPA Regional	16 J	27 U
Dibenzo(a,h)anthracene	15	EPA Regional	0.96 J	0.93 J
Fluoranthene	2300000	EPA Regional	1.2 UJ	8.6
Indeno(1,2,3-cd)pyrene	150	EPA Regional	1.1 JQ	1.8
Phenanthrene			1.2 U	4.1
Phenol	18000000	EPA Regional	25 U	62 J
Pyrene	1700000	EPA Regional	1.2 U	11
Target Analyte List Metals (mg/kg)				
Aluminum			18500	22500
Arsenic	0.39	EPA Regional	3.2	4.57
Barium	15000	EPA Regional	89.1	113
Cadmium	2	MTCA-Method A	0.92	1.2
Calcium			7150	7900
Chromium	280	EPA Regional	48.1 J	54.7 J
Cobalt			15.8	18.1
Copper	3100	EPA Regional	41.5	54
Iron			32600	37200
Lead	250	MTCA-Method A	4.1	5.4
Magnesium			11000	14900
Manganese			497	678
Nickel	1600	EPA Regional	54	65.3
Potassium			1360	2000
Thallium	5.1	EPA Regional	4.7	5.7
Vanadium			72.3	80.1
Zinc	23000	EPA Regional	63	79
Volatile Organic Compounds (µg/kg)				
Acetone	61000000	EPA Regional	20	33
Benzene	30	MTCA-Method A	1.3 U	150
Carbon disulfide	670000	EPA Regional	1.3 U	7.5
Trichlorofluoromethane	800000	EPA Regional	1.3 U	7.8

Note: Bold type indicates the sample result is above the instrument detection limit.
Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

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- µg/kg = micrograms per kilogram.
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- Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.
- R = The data are unusable for all purposes.
- U = The analyte was not detected at or above the reported result.

Table B-11 Subsurface Soil Samples (35 to 40 feet bgs) Analytical Results Summary

EPA Sample ID			08204466	08204464
CLP Sample ID			J8K82	J8K80
Station Locaiton			MP04SB40	SP03SB40
Description	Screening Criteria	Source of Screening Criteria	McConkey Property	Sesko Property
Semivolatile Organic Compounds (µg/kg)				
2-Methylnaphthalene			1.1 U	2.8
Benzo(a)anthracene	150	EPA Regional	1.1 U	2.3
Benzo(a)pyrene Equivalents (BAPE)	15	EPA Regional	1.04	19
Benzo(a)pyrene	15	EPA Regional	1.1 U	18 J
Benzo(b)fluoranthene	150	EPA Regional	1.1 U	2.5
Benzo(g,h,i)perylene			1.4	2.3
Benzo(k)fluoranthene	1500	EPA Regional	1.1 U	2.4
Bis(2-ethylhexyl)phthalate	35000	EPA Regional	160	120
Chrysene	15000	EPA Regional	1.1 U	3.8
Dibenzo(a,h)anthracene	15	EPA Regional	2.2	0.80 JQ
Fluoranthene	2300000	EPA Regional	1.1 U	5.9
Indeno(1,2,3-cd)pyrene	150	EPA Regional	1 JQ	1.6
Phenanthrene			1.1 U	2.2
Phenol	18000000	EPA Regional	23 U	100
Pyrene	1700000	EPA Regional	1.1 U	7.4
Target Analyte List Metals (mg/kg)				
Aluminum			6370	19600
Arsenic	0.39	EPA Regional	0.68	2.21
Barium	15000	EPA Regional	23.9	93.9
Cadmium	2	MTCA-Method A	0.2 JQ	0.91
Calcium			2960	7230
Chromium	280	EPA Regional	14.6 J	46.7 J
Cobalt			4.9 JQ	15.6
Copper	3100	EPA Regional	11.7	44.5
Iron			10100	32400
Lead	250	MTCA-Method A	1.2 U	4.3
Magnesium			3650	12500
Manganese			179	515
Nickel	1600	EPA Regional	21.2	56.2
Potassium			344 JQ	1690
Thallium	5.1	EPA Regional	1.6 JQ	5
Vanadium			23.6	71.3
Zinc	23000	EPA Regional	19.3	67.4
Volatile Organic Compounds (µg/kg)				
Acetone	61000000	EPA Regional	18	56
Benzene	30	MTCA-Method A	1.3 U	250
Carbon disulfide	670000	EPA Regional	1.3 U	5.6
Methylene chloride	20	MTCA-Method A	1.3 U	2.4
Toluene	7000	MTCA-Method A	1.3 U	2.9
Trichlorofluoromethane	800000	EPA Regional	1.3 U	4.5

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

bgs = below ground surface.

CLP = Contract Laboratory Program.

EPA = United States Environmental Protection Agency.

ID = Identification.

J = The analyte was positively identified. The associated numerical result is an estimate.

$\mu\text{g/kg}$ = micrograms per kilogram.

mg/kg = milligrams per kilogram.

Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.

U = The analyte was not detected at or above the reported result.

Table B-12 Subsurface Soil Samples (40 to 45 feet bgs) Analytical Results Summary

EPA Sample ID	08204465		
CLP Sample ID	J8K81		
Station Location	SP03SB45		
Description	Screening Criteria	Source of Screening Criteria	Sesko Property
Semivolatile Organic Compounds (µg/kg)			
Bis(2-ethylhexyl)phthalate	35000	EPA Regional	100
Naphthalene	3900	EPA Regional	78
Phenol	18000000	EPA Regional	77
Target Analyte List Metals (mg/kg)			
Aluminum			8430
Arsenic	0.39	EPA Regional	0.62
Barium	15000	EPA Regional	31.3
Calcium			3740
Chromium	280	EPA Regional	21.2 J
Cobalt			6.4
Copper	3100	EPA Regional	12.9
Iron			13600
Magnesium			4820
Manganese			235
Nickel	1600	EPA Regional	31.7
Vanadium			29.9
Zinc	23000	EPA Regional	33
Volatile Organic Compounds (µg/kg)			
Benzene	30	MTCA-Method A	10
Chloroform	300	EPA Regional	44

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

- bgs = below ground surface.
- CLP = Contract Laboratory Program.
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- µg/kg = micrograms per kilogram.
- mg/kg = milligrams per kilogram.

Table B-13 Groundwater Samples Analytical Results Summary

EPA Sample ID			08204401	08204415	08204422	08204432	08204439	08204446
CLP Sample ID			J8K22	J8K36	J8K43	J8K53	J8K60	J8K67
Station Location		Source of	MP01GW	MP03GW	MP04GW	SP01GW	SP02GW	SP03GW
Description	Screening	Screening	McConkey Property			Sesko Property		
Semivolatile Organic Compounds (µg/L)								
1,1'-Biphenyl			0.5 U	NA	0.5 U	0.5 U	0.5 U	6.3
1,2,4-Trimethylbenzene			0.5 U	NA	0.5 U	0.5 UJ	0.5 U	16
1,3,5-Trimethylbenzene	12	EPA Regional	0.5 U	NA	0.5 U	0.5 UJ	0.5 U	98 J
2,4-Dimethylphenol	730	EPA Regional	0.5 U	NA	0.5 U	0.5 U	0.5 U	32
2-Methylnaphthalene			0.23	NA	0.35	0.11	0.13	170 J
4-Methylphenol			0.5 U	NA	0.5 U	0.5 U	0.5 U	2.3
Acenaphthene	2200	EPA Regional	0.5 U	NA	4.9 J	0.05 U	0.05 U	38
Acenaphthylene			0.05 U	NA	5.4 J	0.089	0.05 U	4.3
Acetophenone			0.5 U	NA	0.5 U	0.5 U	0.5 U	3.8
Anthracene	11000	EPA Regional	0.063	NA	0.4	0.04 J	0.05 U	2.9
Benzo(a)anthracene	0.029	EPA Regional	0.05 U	NA	0.05 U	0.66	0.05 U	0.56
Benzo(a)pyrene	0.0029	EPA Regional	0.05 U	NA	0.05 U	1.1	0.05 U	0.25 J
Benzo(b)fluoranthene	0.029	EPA Regional	0.05 U	NA	0.05 U	0.59	0.05 U	0.15 J
Benzo(g,h,i)perylene			0.072	NA	0.05 U	0.82	0.05 U	0.12 J
Benzo(k)fluoranthene	0.29	EPA Regional	0.05 U	NA	0.05 U	0.7	0.05 U	0.16 J
Bis(2-ethylhexyl)phthalate	4.8	EPA Regional	0.52 U	NA	0.5 JQ	0.49 J	0.33 JQ	0.78
Butylbenzylphthalate	35	EPA Regional	0.5 U	NA	0.5 U	0.34 JQ	0.33 JQ	1
Caprolactam			6.3 J	NA	0.71 J	0.48 JQ	0.5 U	0.5 U
Carbazole			0.5 U	NA	1.3 J	0.5 U	0.5 U	24
Chrysene	2.9	EPA Regional	0.068	NA	0.5 U	1.1	0.05 U	0.92
Dibenzo(a,h)anthracene	0.0029	EPA Regional	0.05 U	NA	0.05 U	0.11	0.5 U	0.031 JQ
Dibenzofuran			0.5 U	NA	0.29 JQ	0.5 U	0.5 U	1.1
Diethylphthalate	29000	EPA Regional	0.5 U	NA	0.5 U	0.34 JQ	0.5 U	0.41 JQ
Fluoranthene	1500	EPA Regional	0.12	NA	0.26	0.81	0.05 U	3.7
Fluorene	1500	EPA Regional	0.067	NA	0.25	0.05 U	0.05 U	6.1
Indeno(1,2,3-cd)pyrene	0.029	EPA Regional	0.05 U	NA	0.05 U	0.4	0.05 U	0.09 J
Phenanthrene			0.16	NA	0.05 U	0.33 JQ	0.05 U	6.7
Phenol	11000	EPA Regional	0.5 U	NA	0.5 U	0.5 U	0.05 U	33
Pyrene	1100	EPA Regional	0.19	NA	0.36	1.1	0.05 U	1.6
Target Analyte List Metals (mg/L)								
Arsenic	0.045	EPA Regional	1.7	0.39	4.1	1.1	0.63	0.9
Barium	2000	EPA Regional	953	5840	174	2370	35.7	3140
Beryllium			2.6	13.6	0.37 JQ	6.4	1 U	7.6
Cadmium	5	EPA Regional	0.9 JQ	2	0.16 JQ	1.8	0.05 JQ	3.9
Chromium	50	EPA Regional	304	1090	69.6	845	2.4	1670
Cobalt			23 J	89.5	8.3 J	41.7 J	1.4 J	23.6 J
Copper	1300	EPA Regional	44.8 J	293	32 J	59.8 J	1.9 JQ	111 J
Lead	15	EPA Regional	43.2 J	179	8 J	132 J	0.44 JQ	268 J
Manganese			6580	8840	3020	12400	98.1	25600
Nickel			96.1 J	458	38.2 J	106 J	5.2 J	125 J

Table B-13 Groundwater Samples Analytical Results Summary

EPA Sample ID			08204401	08204415	08204422	08204432	08204439	08204446
CLP Sample ID		Source of	J8K22	J8K36	J8K43	J8K53	J8K60	J8K67
Station Location		Screening	MP01GW	MP03GW	MP04GW	SP01GW	SP02GW	SP03GW
Description	Screening Criteria	Screening Criteria	McConkey Property			Sesko Property		
Selenium	50	Washington MCL	1.4 JQ	2.9 JQ	5 UJ	2.9 JQ	5 UJ	5.5 J
Silver	100	EPA Regional	0.26 JQ	0.72 JQ	0.07 JQ	0.7 JQ	1 UJ	1.4 J
Thallium			1	1.7	0.26 JQ	0.94 JQ	1 U	0.82 JQ
Vanadium			454	926	78.2	717	3.7 JQ	714
Zinc	5000	EPA Regional	72 J	417	37.2 U	126 J	4.5 U	153 J
Total Petroleum Hydrocarbons (mg/L)								
Diesel Range Organics	0.5	EPA Regional	0.38 J	0.17 J	0.51 J	0.25 UJ	0.25 U	5.5 J
Volatile Organic Compounds (µg/L)								
Acetone	22000	EPA Regional	3.9 JQ	3.9 JQ	5 U	5 UJ	5 U	500 UJ
Benzene	0.41	EPA Regional	5.4 J	0.25 U	70	0.35 UJ	0.35 U	3100 J
Cyclohexane			0.25 U	0.25 U	0.38	0.25 U	0.25 U	25 U
Ethylbenzene	1.5	EPA Regional	0.25 U	0.25 U	26	0.25 UJ	0.25 U	190 JQ
Isopropylbenzene			0.25 U	0.25 U	3	0.25 UJ	0.25 U	22 JQ
Naphthalene	0.14	EPA Regional	0.45	0.25 UJ	2.3	0.25 UJ	0.25 UJ	1800
o-Xylene	1400	EPA Regional	0.25 U	0.25 U	5.8	0.25 UJ	0.25 U	640 J
Toluene	1000	MTCA-Method A	0.25 U	0.25 U	1.5	0.25 UJ	0.25 U	58 J
Trichloroethene	1.7	EPA Regional	0.25 U	0.25 U	0.25 U	0.31 J	0.49 J	25 UJ

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

CLP = Contract Laboratory Program.

EPA = United States Environmental Protection Agency.

ID = Identification.

J = The analyte was positively identified. The associated numerical result is an estimate.

µg/L = micrograms per liter.

mg/L = milligrams per liter.

MCL = Maximum Contaminant Levels

NA = The analyte was not analyzed for.

Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.

U = The analyte was not detected at or above the reported result.

Table B-14 Sediment Samples Analytical Results Summary

EPA Sample ID	Screening	Source of	08204458	08204459	08204460	08204461	08204462
CLP Sample ID	Criteria	Screening	J8K74	J8K75	J8K76	J8K77	J8K78
Station Location		Criteria	WN01SD	WN02SD	WN03SD	WN04SD	WN05SD
Description			Washington Narrows				
Semivolatile Organic Compounds (µg/kg)							
1,1'-Biphenyl			110	71	90	60	25 U
1,2,4-Trimethylbenzene			18 J	26 U	27 U	15 JQ	25 U
2-Methylnaphthalene	64	SQuiRT	690	390	370	210	19
4-Methylphenol	670	SQS	25 U	17 JQ	17 J	25 U	25 U
Acenaphthene	130	SQuiRT	360	73	240	97	15
Acenaphthylene	71	SQuiRT	1100	1500	1700	1300	48
Acetone	61000000	SQS	6.6 U	9 U	28	6.8 U	7.1 U
Anthracene	280	SQuiRT	830	1300	2300	1700	34
Benzaldehyde			25 U	26 U	38	25 U	19 JQ
Benzo(a)anthracene	960	SQuiRT	3200	3200	3000	5600	160
Benzo(a)pyrene	1100	SQuiRT	3600	3700	3400	6300	260
Benzo(b)fluoranthene	1800	SQuiRT	2000	2000	3100	3400	130
Benzo(g,h,i)perylene	670	SQS	2100	2700	3000	3800	190
Benzo(k)fluoranthene	1800	SQuiRT	2200	2600	1300	3600	160
Benzo(b + k)fluoranthene	3200	SQS	4200	4600	4400	7000	290
Bis(2-ethylhexyl)phthalate	1300	SQS	25 U	26 U	27 U	25 U	42
Carbazole			110	100	110	69	25 U
Chrysene	950	SQuiRT	3200	3500	3300	6000	170
Dibenzo(a,h)anthracene	230	SQS	600	920	870	860	47
Dibenzofuran	110	SQuiRT	74	58	71	69	25 U
Ethylbenzene	4	SQuiRT	2.3	1.8 U	1.6 U	1.4 U	1.4 U
Fluoranthene	1300	SQuiRT	6600	6000	6500	15000 J	400
Fluorene	120	SQuiRT	450	10000	700	780	13
Indeno(1,2,3-cd)pyrene	600	SQS	2000	2500	3100	3200	150
Naphthalene	230	SQuiRT	1300	1.1 JQ	0.95 J	1.4 U	1.4 U
o-Xylene	430000	SQS	5.7	1.8 U	1.6 U	1.4 U	1.4 U
Pentachlorophenol	17	SQuiRT	24 UJ	25 UJ	26 UJ	24 UJ	34
Phenanthrene	660	SQuiRT	2200	1900	2900	8100 J	140
Pyrene	2400	SQuiRT	9100	7100	7500	18000	500
Target Analyte List Metals (mg/kg)							
Aluminum			9030 J	7130 J	7640 J	6290 J	6020 J
Antimony	9.3	SQuiRT	3.9 JQ	R	R	R	R
Arsenic	35	SQuiRT	2.3	2.3	5.1	2.6	1.5
Barium	48	SQuiRT	19.1 JQ	30.2 J	47 J	16.6 JQ	13.3 JQ

Table B-14 Sediment Samples Analytical Results Summary

EPA Sample ID	Screening	Source of	08204458	08204459	08204460	08204461	08204462
CLP Sample ID	Criteria	Screening	J8K74	J8K75	J8K76	J8K77	J8K78
Station Location		Criteria	WN01SD	WN02SD	WN03SD	WN04SD	WN05SD
Description			Washington Narrows				
Beryllium			2.7	2.1	2.3	2	1.9
Calcium			33600 J	5530 J	17200 J	6140 J	2390 J
Chromium	62	SQuiRT	21.2 J	19.3 J	20.2 J	17.5 J	16.6 J
Cobalt			3.7 JQ	3.9 JQ	26.3	3.5 JQ	3 JQ
Copper	390	SQS	26.7	22.1	71.7	13.5	8.6
Iron			12500 J	14000 J	15900 J	11400 J	9730 J
Lead	400	SQuiRT	16.1 J	19.4 J	30 J	10.1 J	8.9 J
Magnesium			4210	4640	3970	4110	3350
Manganese	260	SQuiRT	168	180	166	135	174
Mercury	0.41	SQS	0.0278 JQ	0.028 JQ	0.021 JQ	0.021 JQ	0.1
Nickel	110	SQuiRT	26.7 J	33.5 J	52.6 JQ	25.3 J	21.4 J
Potassium			603 J	563	494 JQ	497 JQ	415 JQ
Sodium			1390	996	1560	1930	605
Thallium			2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Vanadium			29.8	27.8	36.5	25	21.6
Zinc	410	SQS	79.9 J	57.4 J	78.9 J	36.5 J	23.2 J
Volatile Organic Compounds (µg/kg)							
Benzene	30	SQS	7.4	1.8 U	1.5 JQ	1.4 U	1.4 U

Note: Bold type indicates the sample result is above the instrument detection limit.
 Highlighted cells indicate the sample result exceeds its analyte-specific screening criteria.

Key:

CLP = Contract Laboratory Program.

EPA = United States Environmental Protection Agency.

ID = Identification.

J = The analyte was positively identified. The associated numerical result is an estimate.

µg/L = micrograms per liter.

mg/L = milligrams per liter.

NA = The analyte was not analyzed for.

Q = Detected concentration is below the method reporting limit/contract Required Quantitation Limit, but is above the method quantitation limit.

SQS = Washington State Sediment Quality Standard

SQuiRT = NOAA Screening Quick Reference Tables

U = The analyte was not detected at or above the reported result.

C

Sample Plan Alteration Form

SAMPLE PLAN ALTERATION FORM

RECEIVED

JUL 06 2009

Environmental
Cleanup Office

Project Name and Number: Bremerton Gasworks

Technical Direction Document Number: 07-01-0008

Material to be sampled: Subsurface soil, groundwater, sediments

Measurement Parameters: Not applicable.

Standard Procedure for Field Collection & Laboratory Analysis (cite references): Not applicable

Reason for Change in Field Procedure of Analytical Variation: During the sampling event, obvious contamination was noted during drilling at location MP04.

Variation from Field or Analytical Procedure: Collection of three additional soil samples from this location. Additional sample depths were added at 35 feet below ground surface (bgs), and 40 feet bgs. Additionally, no sample was collected from the 30 foot depth at this location due to a lack sufficient sample volume. START contacted the EPA TM on May 13, 2008 regarding the change to the sample plan; this telephone call was not noted in the log book.

Special Equipment, Materials, or Personnel Required: Additional sampling supplies, submittal of additional samples at KAP laboratories (a Contract Laboratory Program laboratory), and Manchester Environmental Laboratory.

Contact:	Approved Signature	Date
Initiator:	<i>Diane Rossant</i>	6/15/2009
START PL:	<i>Anna K. Peterson</i>	6/15/2009
EPA TM:	<i>Carrie L. Baw</i>	7/2/09
EPA QA Officer:	<i>Bdell</i> for <i>Carrie L. Baw</i>	7/2/09

Carrie L. Baw

SAMPLE PLAN ALTERATION FORM

Project Name and Number: Bremerton Gasworks

Technical Direction Document Number: 07-01-0008

Material to be sampled: Subsurface soil, groundwater, sediments

Measurement Parameters: Not applicable.

Standard Procedure for Field Collection & Laboratory Analysis (cite references): Not applicable

Reason for Change in Field Procedure of Analytical Variation: During the sampling event, obvious contamination was noted during drilling at location MP01.

Variation from Field or Analytical Procedure: Collection of one additional soil sample from this location at a depth of 35 feet below ground surface. START contacted the EPA TM on May 14, 2008 regarding the change to the sample plan; this telephone call was not noted in the log book.

Special Equipment, Materials, or Personnel Required: Additional sampling supplies, submittal of additional samples at KAP laboratories (a Contract Laboratory Program laboratory), and Manchester Environmental Laboratory.

Contact:	Approved Signature	Date
Initiator:	<i>Bruce Thoburn</i>	6/15/2009
START PL:	<i>Renee K. Pendergast</i>	6/15/2009
EPA TM:	<i>Samuel LaBrie</i>	7/2/09
EPA QA Officer:	<i>Ed Plummer</i> for Garma Grepo Greve	7/2/09

SAMPLE PLAN ALTERATION FORM

Project Name and Number: Bremerton Gasworks

Technical Direction Document Number: 07-01-0008

Material to be sampled: Subsurface soil, groundwater, sediments

Measurement Parameters: Not applicable.

Standard Procedure for Field Collection & Laboratory Analysis (cite references): Not applicable

Reason for Change in Field Procedure of Analytical Variation: During the sampling event, obvious contamination was noted during drilling at location SP03.

Variation from Field or Analytical Procedure: Collection of three additional soil samples this location. Additional sample depths were added at 35 feet below ground surface (bgs), 40 feet bgs, and 45 feet bgs. START contacted the EPA TM on May 12, 2008 regarding the change to the sample plan; this telephone call was not noted in the log book.

Special Equipment, Materials, or Personnel Required: Additional sampling supplies, submittal of additional samples at KAP laboratories (a Contract Laboratory Program laboratory), and Manchester Environmental Laboratory.

Contact:	Approved Signature	Date
Initiator:	<i>Diane Robbert</i>	6/15/2009
START PL:	<i>Jim McGee</i>	6/15/2009
EPA TM:	<i>Ramon LaBar</i>	7/2/09
EPA QA Officer:	<i>Ed Plunk</i> For Ginna Curepo-Crove	7/2/09

D

Global Positioning System Coordinates

Appendix D Global Positioning System Coordinates

Sample Number	Sample Description	Sample Date	Latitude	Longitude	Elevation (feet)
SP02	Sesko Property 02	1/20/2009	47.578034	-122.64229	10.441
SP03	Sesko Property 03	1/20/2009	47.57786	-122.642296	10.983
SP01	Sesko Property 01	1/20/2009	47.578091	-122.642616	10.801
MP01	McConkey Property 01	1/20/2009	47.578011	-122.643144	12.161
MP04	McConkey Property 04	1/20/2009	47.578426	-122.642918	12.384
MP02	McConkey Property 02	1/20/2009	47.577887	-122.643409	15.859
MP03	McConkey Property 03	1/20/2009	47.578042	-122.643465	14.231

E

Borehole Reports

DRILLING LOG OF WELL/BORING NO. MP-01

Page 1 of 1

Project/Location: Bremerton Gas Works / Bremerton, WA
 Boring Location: Between welding shop and granite countertop workshop
 Date Started/Finished: 5/14/2008 - 5/14/2008
 Drilling Contractor: Boart Longyear - John Bennett
 Drill Method: Hollow Stem Auger/1.5' splitspoon

Total Depth of Hole (feet BGS): 35
 Ground Elevation (feet above N/A): _____
 Inner Casing Elevation (TOC): _____
 Groundwater Depth (feet BGS): _____
 First Encountered: ▽ _____ Final: ▼ _____
 Geologist: Courtney Funk

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL PID Readings (PPM)	RECOVERY (feet)	LEL (%)	Blow Counts	COMMENTS Reviewed By:
Ground Surface Elevation			ground surface (gs)					
1	No well installed. Borehole was plugged with hydrated sodium-bentonite chips (3/8-inch).		Auger down to 3.5 feet below ground surface (bgs).	0	0.9			
2								
3			3.5					
4			4.0 Dark brown SAND with concrete fragments from blacktop, dry, no odor.	0	0.5			Sample MP01SB05 was collected.
5								
6			8.5 Light brown fine to medium SAND, some silt, dry, no odor. Auger down to 8.5 feet bgs.	0	1.5			Sample MP01SB10 was collected.
7								
8			13.5 Light brown-grey fine to medium SAND, some large and small gravel, trace silt, dry, no odor. Auger down to 13.5 feet bgs.	0	1.5			Sample MP01SB15 was collected.
9								
10			18.5 Light brown-grey fine to medium SAND, dry, no odor. Auger down to 18.5 feet bgs.	0	1.5			Sample MP01SB20 was collected.
11								
12			23.5 Light brown-grey fine to medium SAND, some coarse grains, trace silt, moist, no odor. Auger down to 23.5 feet bgs.	0	1.5			Sample MP01SB25 was collected.
13								
14			28.5 Grey silty SAND, some small gravel, trace large gravel, moist, no odor. Auger down to 28.5 feet bgs.		1.5			Sample MP01SB30 was collected.
15								
16			33.5 Light brown-grey CLAY, medium plasticity, dry, no odor.					Sample MP01SB35 was collected.
17			34.0					
18			35.0 Light brown-grey CLAY with reddish brown well graded sand, oxidation present, transitional interval, dry no odor.					
19								
20			END boring at 35' - no oil material or odor observed					
21								
22								
23								
24								
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PROJECT NAME: Bremerton Gas Works
 WELL NO.: MP-01

WELL LOG BREMERTON.GPJ 11-25-08

BREMERTON-010741

Page 1 of 1

Geologist: Courtney Funk

WELL LOG BREMERTON.GPJ 11-25-08

BREMERTON-010742

DRILLING LOG OF WELL/BORING NO. MP-03

Page 1 of 1

Project/Location: Bremerton Gas Works / Bremerton, WA Total Depth of Hole (feet BGS): 20

Boring Location: West of Thomas Avenue, inside fence Ground Elevation (feet above N/A): _____

Date Started/Finished: 5/19/2008 - 5/19/2008 Inner Casing Elevation (TOC): _____

Drilling Contractor: Dave Puckett First Encountered: ▽ 18 Final: ▼ _____

Drill Method: Hollow Stem Auger/1.5' splitspoon Geologist: Courtney Funk

										COMMENTS
										Reviewed By:
ELEVATION	DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	PID Readings (PPM)	RECOVERY (feet)	LEL (%)	Blow Counts	
Ground Surface Elevation				ground surface (gs)						
1		No well installed. Borehole was plugged with hydrated sodium-bentonite chips (3/8-inch).		Auger down to 3.5 feet below ground surface (bgs).						
2							1.5		0	
3				3.5						
4					Light brown grey SILT, some clay, some fine sand, dry, trace very small gravel. Auger down to 8.5 feet bgs. FID: 0.0 Blow counts: 5-6-9					Sample MP03SB05 was collected.
5							0		0	
6				8.5						
7										
8				10.0						
9					Grey/brown SILT with some clay, trace fine sand, trace small gravel, low plasticity, dry FID: 0.0 Blow counts: 10-16-12		1.5		0	Sample MP03SB10 was collected.
10										
11										
12										
13										
14							0		0	
15										
16				16.5						
17					SILT, no recovery, refusal, unable to salvage a sample for SB15, will continue to 18.5 - 20					
18							1.5			
19										
20				20.0						Sample MP03SB20 was collected.
21					Light brown/grey sorted fine medium coarse SAND, trace silt, trace gravel, wet, water at 18' bgs FID: 0.0 Blow counts: 5-7-13					
22					END of boring at 20' bgs					
23										
24										
25										



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PROJECT NAME: Bremerton Gas Works
WELL NO.: MP-03

WELL LOG BREMERTON.GPJ 11-25-08

BREMERTON-010743

DRILLING LOG OF WELL/BORING NO. MP-04

Page 1 of 1

Project/Location: Bremerton Gas Works / Bremerton, WA Total Depth of Hole (feet BGS): 40

Boring Location: South of Port Washington Narrows, west of Sesko Ground Elevation (feet above N/A): _____

Prop _____ Inner Casing Elevation (TOC): _____

Date Started/Finished: 5/13/2008 - 5/13/2008 Groundwater Depth (feet BGS): _____

Drilling Contractor: Boart Longyear - John Bennett First Encountered: ▽ 31 Final: ▽ 31.35

Drill Method: Hollow Stem Auger/1.5' splitspoon Geologist: Courtney Funk

ELEVATION DEPTH (feet)		WELL COMPLETION DIAGRAM	GRAPHIC LOG	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL PID Readings (PPM)	RECOVERY (feet)	LEL (%)	Blow Counts	COMMENTS Reviewed By:
Ground Surface Elevation				ground surface (gs)					
1		Heavy Gauged Steel Protective Casing							
2		Concrete Cement Base.							
3									
4				3.5 SILT. Auger down to 3.5 feet below ground surface (bgs).		1.5		0	
5				4.3 Grey sandy SILT, some small gravel, trace clay, dry.		1.5		0	Sample MP04SB05 was collected.
6				8.5 Light brown fine SAND, some silt, dry, slight odor. Auger down to 8.5 bgs.		1.5		0	Sample MP04SB10 was collected.
7		Hydrated Sodium-Bentonite Seal with 3/8" Chips.		13.5 Light brown fine to medium SAND, some silt, dry, no odor. Auger down to 13.5 bgs.		1.5		0	Sample MP04SB15 was collected.
8		2.0" ID, Schedule 40, PVC Riser.		18.5 Light brown and grey SILT, some sand, dry, no odor. Auger down to 18.5 bgs.		4		0	Sample MP04SB20 was collected.
9				23.5 Light brown fine to medium SAND, trace silt, dry, no odor. Auger down to 23.5 bgs.		4		0	Sample MP04SB25 was collected.
10				25.0 GRAVEL. Refusal - no recovery due to a mixture of small and large gravel and cobbles.		4		0	Sample MP04SB30 was collected.
11				25.8 Reddish brown SILT with some sand and some small and large gravel, dry, no odor.		1		0	Sample MP04SB35 was collected.
12		20/40 Mesh Silica Sand Filter Pack 2.0" ID, Schedule 40, PVC Screen (0.010" Slots).		33.5 light brown-grey CLAY, trace silt, dry, no odor, medium plasticity. GRAVEL. Refusal - no recovery due to a large amount of cobbles at this interval.		1.5		0	Sample MP04SB40 was collected.
13				38.5 Grey well graded fine to medium to coarse SAND, trace silt, trace gravel, moist. Auger down to 40 feet bgs.		1.5		0	Sample MP04SB45 was collected.
14				40.0 Grey well graded fine to medium to coarse SAND, trace silt, trace clay, saturated, no odor.					
15				END boring at 40 feet bgs.					
16									
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PROJECT NAME: Bremerton Gas Works
WELL NO.: MP-04

WELL LOG BREMERTON.GPJ 11-25-08

BREMERTON-010744

DRILLING LOG OF WELL/BORING NO. SP-01

Page 1 of 2

Project/Location: Bremerton Gas Works / Bremerton, WA Total Depth of Hole (feet BGS): 20
 Boring Location: West of Pennsylvania Avenue, southeast of Ground Elevation (feet above N/A): _____
MW-04 Inner Casing Elevation (TOC): _____
 Date Started/Finished: 5/12/2008 - 5/12/2008 Groundwater Depth (feet BGS): _____
 Drilling Contractor: Boart Longyear - John Bennett First Encountered: ▽ 17 Final: ▼ _____
 Drill Method: Hollow Stem Auger/1.5' splitspoon Geologist: Courtney Funk

							COMMENTS
ELEVATION	WELL	GRAPHIC LOG	SOIL/ROCK	SAMPLE INTERVAL	RECOVERY	LEL	Blow Counts
DEPTH (feet)	COMPLETION		DESCRIPTION	PID Readings (PPM)	(feet)	(%)	
	DIAGRAM						
Ground Surface Elevation							
			ground surface (gs)				
1	No well installed. Borehole was plugged with hydrated sodium-bentonite chips (3/8-inch).		SAND. Auger down to 3.5 feet below ground surface (bgs).				
2					1.5		
3							
4			3.5 3.8 Light brown and grey well graded SAND, dry, no odor present.				Sample SP01SB05 was collected.
5			4.5 Light brown and grey very fine to fine SAND, some silt, trace gravel (small), dry. FID: 0.0, Blow counts:3-9-13.				
6			Light brown/grey CLAY medium plasticity, dry. Auger down to 8.5 feet bgs.		0		
7							
8							
9			8.5 9.0 Light brown/grey CLAY with predominant red brown sand lenses with oxidation present, trace silt, medium plasticity, dry. FID: 0.0, Blow counts:9-13-15.				Sample SP01SB105 was collected.
10			Light brown/grey well graded SAND, dry. Auger down to 13.5 feet bgs.		1.5		
11							
12							



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PROJECT NAME: Bremerton Gas Works
WELL NO.: SP-01

WELL LOG BREMERTON.GPJ 11-25-08

BREMERTON-010745

DRILLING LOG OF WELL/BORING NO. SP-01

Page 2 of 2

Project/Location: Bremerton Gas Works / Bremerton, WA

Total Depth of Hole (feet BGS): 20

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	PID Readings (PPM)	RECOVERY (feet)	LEL (%)	Blow Counts	COMMENTS
									Reviewed By:
13			13.5						Sample SP01SB15 was collected.
14			Light brown/grey well graded SAND, wet.			1.5			
15			Light brown/grey CLAY with predominant reddish brown sand lenses (fine - medium), trace gravel, wet, low plasticity and oxidation present. FiD: 0.0, Blow counts:19-49-57. Auger down to 18.5 feet bgs.						Sample SP01SB20 was collected.
16									
17									
18			18.5			1.5			Sample SP01SB20 was collected.
19			Light brown/grey CLAY with predominant reddish brown sand lenses (fine - medium), wet, low plasticity and oxidation present.						
20			19.3						
20			20.0						
21			Light brown/grey CLAY, trace sand, wet, medium plasticity, cohesive. FID: 0.0, Blow counts:23-29-47. End of boring at 20 feet bgs, no water encountered						
22									
23									
24									
25									
26									
27									
28									



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PROJECT NAME: Bremerton Gas Works
WELL NO.: SP-01

WELL LOG BREMERTON.GPJ 11-25-08

BREMERTON-010746

DRILLING LOG OF WELL/BORING NO. SP-02

Page 1 of 1

Project/Location: Bremerton Gas Works / Bremerton, WA
 Boring Location: West of Pennsylvania Avenue, northeast of MW-04
 Date Started/Finished: 5/12/2008 - 5/12/2008
 Drilling Contractor: Boart Longyear - John Bennett
 Drill Method: Hollow Stem Auger/1.5' splitspoon

Total Depth of Hole (feet BGS): 35
 Ground Elevation (feet above N/A): _____
 Inner Casing Elevation (TOC): _____
 Groundwater Depth (feet BGS): _____
 First Encountered: ▽ 28.5 Final: ▼ 29.3
 Geologist: Courtney Funk

ELEVATION		WELL COMPLETION DIAGRAM	GRAPHIC LOG	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL			Blow Counts	COMMENTS
DEPTH (feet)					PID Readings (PPM)	RECOVERY (feet)	LEL (%)		
Ground Surface Elevation				ground surface (gs)					Reviewed By:
1		Concrete Cement Base.		Light brown very fine to fine SAND, some silt, some gravel, root material present, dry. FID:0.0, Blow counts:1-1-1. Auger down to 10 feet below ground surface (bgs).		1.5		0	Sample SP02SB05 was collected.
2						1.5		0	
3									Sample SP02SB10 was collected.
4									
5									Sample SP02SB15 was collected.
6									
7									Sample SP02SB20 was collected.
8									
9		Hydrated Sodium-Bentonite Seal with 3/8" Chips.		10.0 Light brown-grey SILT, some sand, some clay, trace gravel, trace brick fragments, dry. FID:0.0, Blow counts:8-11-14.		1.5		0	Sample SP02SB25 was collected.
10				12.5					
11				14.0					Sample SP02SB30 was collected.
12									
13									Sample SP02SB35 was collected.
14									
15									Sample SP02SB40 was collected.
16									
17		2.0" ID, Schedule 40, PVC Riser.		19.0 Light brown-grey SILT, some sand, some clay, dry.		1.5		0	Sample SP02SB45 was collected.
18									
19				23.5 Grey CLAY, trace silt, dry, medium plasticity. FID:0.0, Blow counts:8-13-50. Auger down to 23.5 feet bgs.		1.5		0	Sample SP02SB50 was collected.
20									
21									Sample SP02SB55 was collected.
22									
23									Sample SP02SB60 was collected.
24									
25		20/40 Mesh Silica Sand Filter Pack		28.5 Grey medium to fine SAND, wet, trace brick fragments. FID:0.0, Blow counts:25-44-54. Auger down to 28.5 feet bgs.		1.5		0	Sample SP02SB65 was collected.
26									
27									Sample SP02SB70 was collected.
28									
29									Sample SP02SB75 was collected.
30									
31									Sample SP02SB80 was collected.
32									
33									Sample SP02SB85 was collected.
34									
35		2.0" ID, Schedule 40, PVC Screen (0.010" Slots).		35.0 Grey medium to fine SAND, wet, no odor, water encountered at 28.5 feet bgs. FID:0.0, Blow counts:23-55. Auger to 35 feet bgs for well installation. no oil material or odors observed. END of boring at 35 feet bgs.		0		0	Sample SP02SB90 was collected.
36									
37									Sample SP02SB95 was collected.
38									
39									Sample SP02SB100 was collected.
40									
41									Sample SP02SB105 was collected.
42									
43									Sample SP02SB110 was collected.
44									
45									Sample SP02SB115 was collected.



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PROJECT NAME: Bremerton Gas Works
 WELL NO.: SP-02

WELL LOG BREMERTON.GPJ 11-25-08

BREMERTON-010747

DRILLING LOG OF WELL/BORING NO. SP-03

Page 1 of 2

Project/Location: Bremerton Gas Works / Bremerton, WA Total Depth of Hole (feet BGS): 45
 Boring Location: South of Port Washington Narrows, east of N Ground Elevation (feet above N/A): _____
 McConkey Prop _____ Inner Casing Elevation (TOC): _____
 Date Started/Finished: 5/12/2008 - 5/12/2008 Groundwater Depth (feet BGS): _____
 Drilling Contractor: Boart Longyear - John Bennett First Encountered: ▽ 41 Final: ▼ _____
 Drill Method: Hollow Stem Auger/1.5' splitspoon Geologist: Courtney Funk

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL PID Readings (PPM)	RECOVERY (feet)	LEL (%)	Blow Counts	COMMENTS Reviewed By:
Ground Surface Elevation			ground surface (gs)					
1	No well installed. Borehole was plugged with hydrated sodium-bentonite chips (3/8-inch).		Light brown-grey very fine to fine SAND, some silt, root material, some small gravel, dry.				0	
2								
3								
4			4.3					Sample SP03SB05 was collected.
5			5.0 Black coated SAND, coal fragments, oil materials, slight odor, dry. FID:138, Blow counts:5-3-2.		0.9		0	
6			Black coated SAND, coal fragments, oil materials, slight odor.					
7			8.0 FID:25, Blow counts: 50 for 50.					
8			Black coated fine to medium SAND, some silt, wood fragments, coal fragments, large gravel, ash material, trace brick, staured with oil material, moderate to strong odor. PID:348 ppm, FID:308, blow counts:2-2-2. Auger down to 13.5 feet below ground surface (bgs).		0.5		0	Sample SP03SB10 was collected.
9								
10								
11								
12								
13			13.5					
14			14.0 Grey very fine to fine SAND, some silt, moist, no visual oil material, slight odor.				0	Sample SP03SB15 was collected.
15			Grey CLAY with reddish brown sand lenses throughout, oxidation present, dry, moderate plasticity. FID:36, blow counts:6-6-6. Auger down to 18.5 feet bgs		1.5		0	
16			18.5					
17			19.0					
18			19.5 Light brown-grey SILT, some clay, trace silt					Sample SP03SB20 was collected.
19			Grey CLAY with reddish brown sand lenses, dry, medium plasticity.					
20			Light brown-grey SILT, some clay, trace sand. FID:0, blow counts:12-16-23. Auger down to 23.5 feet bgs.				0	
21			23.5					
22			Grey CLAY, some silt, dry, medium					Sample SP03SB25 was collected.
23								
24								
25								



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PROJECT NAME: Bremerton Gas Works
WELL NO.: SP-03

WELL_LOG BREMERTON.GPJ 11-25-08

BREMERTON-010748

DRILLING LOG OF WELL/BORING NO. SP-03

Page 2 of 2

Project/Location: Bremerton Gas Works / Bremerton, WA

Total Depth of Hole (feet BGS): 45

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	PID Readings (PPM)	RECOVERY (feet)	LEL (%)	Blow Counts	COMMENTS
									Reviewed By:
26			plasticity, slight odor. FID:11 ppm. Auger down to 28.5 feet bgs.			1.5		0	Sample SP03SB30 was collected.
27									
28			28.5						
29			Grey CLAY, some silt, dry, medium plasticity. Auger down 33.5 feet bgs. FID:0, blow counts:9-14-18.			1.5		0	
30									
31									Sample SP03SB35 was collected.
32									
33			33.5						
34			Grey CLAY, some silt, dry, medium plasticity, no odor. Auger down 38.5 feet bgs. FID:0, blow counts:9-17-24.			1.5		0	Sample SP03SB40 was collected.
35									
36									
37									Sample SP03SB45 was collected.
38						1.5			
39			38.5						
40			39.3 Grey CLAY with some sand, some silt, dry, med/low plasticity						Sample SP03SB45 was collected.
41			Grey CLAY, some silt, dry, medium plasticity. Auger down 43.5 feet bgs.						
42									
43			43.5						
44			Dark grey SAND, well graded, wet slight odor, very slight staining. FID:0, Blow counts:23-50-5. END boring at 45 feet bgs.						
45			45.0						
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									



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PROJECT NAME: Bremerton Gas Works
WELL NO.: SP-03

WELL LOG BREMERTON.GPJ 11-25-08

BREMERTON-010749

F

Quality Assurance/Quality Control and Data Validation Memoranda

APPENDIX F

QA/QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of sampling equipment, glassware and reagents. Specific QC requirements for laboratory analyses are incorporated in the *Contract Laboratory Program Statement of Work for Inorganic Analyses* (EPA 2007b) and *Contract Laboratory Program Statement of Work for Organic Analyses* (EPA 2007a). These QC requirements or equivalent requirements found in the analytical methods were followed for analytical work on the TBA. This section describes the QA/QC measures taken for the TBA and provides an evaluation of the usability of data presented in this report.

Data from the CLP laboratories and the Manchester Environmental Laboratory were reviewed and validated by EPA chemists. Data qualifiers were applied as necessary according to the following guidance:

- EPA (2004) *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*; and
- EPA (2008) *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*.

In the absence of other QC guidance, method- and/or SOP-specific QC limits were also utilized to apply qualifiers to the data.

Satisfaction of Data Quality Objectives

The following EPA (EPA 2000) guidance document was used to establish data quality objectives (DQOs) for this TBA:

- *Guidance for the Data Quality Objectives Process* (EPA QA/G-4), EPA/600/R-96/055.

The EPA TM determined that definitive data without error and bias determination would be used for the sampling and analyses conducted during the field activities. The data quality achieved during the field work produced sufficient data that met the DQOs stated in the SQAP (E & E 2008). A detailed discussion of accomplished TBA objectives is presented in the following sections.

QA/QC Samples

QA samples (rinsate and trip blanks) were collected, including three rinsate blanks and six trip blanks. Rinsate blank samples were collected at the required frequency of one per 20 samples collected with non-dedicated sampling equipment. Trip blank samples were collected at the required frequency of one per VOC or NWTPH-Gx sample cooler. QC samples included matrix spike/matrix spike duplicate (MS/MSD) samples for organic

analyses at a rate of one MS/MSD per 20 samples per matrix and MS/duplicate samples for inorganic analyses at a rate of one MS/duplicate per 20 samples per matrix.

Project-Specific Data Quality Objectives

The laboratory data were reviewed to ensure that DQOs for the project were met. The following describes the laboratories' abilities to meet project DQOs for precision, accuracy and completeness and the field team's ability to meet project DQOs for representativeness and comparability. The laboratories and the field team were able to meet DQOs for the project.

Precision

Precision measures the reproducibility of the sampling and analytical methodology. Laboratory and field precision is defined as the relative percent difference (RPD) between duplicate sample analyses. The laboratory duplicate samples or MS/MSD samples measure the precision of the analytical method. The RPD values were reviewed for all commercial laboratory samples. A total of 35 sample results (approximately 0.37% of the data) were qualified as estimated quantities (J or UJ) based on laboratory duplicate QC outliers. The DQO for precision of 90% was met.

Accuracy

Accuracy measures the reproducibility of the sampling and analytical methodology. Laboratory accuracy is defined as the surrogate spike percent recovery (%R) or the MS %Rs for all laboratory analyses. The surrogate %R values were reviewed for all appropriate sample analyses. A total of 229 sample results (approximately 2.4% of the data) were qualified as estimated quantities (J) based on surrogate results.

The MS %R values were reviewed for all MS/MSD analyses. A total of 94 sample results (approximately 0.98% of the data) were qualified as estimated quantities (J or UJ) and 39 results (approximately 0.41% of the data) were rejected (R) based on MS/MSD results. The DQO for accuracy of 90% was met.

Completeness

Data completeness is defined as the percentage of usable data (usable data divided by the total possible data). All laboratory data were reviewed for data validation and usability. A total of 39 results were rejected (approximately 0.41% of the data); therefore, the project DQO for completeness of 90% was met.

Representativeness

Data representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point or environmental condition. The number and selection of samples were determined in the field to account accurately for site variations and sample matrices. The DQO for representativeness of 90% was met.

Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Data produced for this site followed applicable field sampling techniques and specific analytical methodology. The DQO for comparability of 90% was met.

Laboratory QA/QC Parameters

The laboratory data also were reviewed for holding times/temperatures, laboratory blank samples; field/trip blank samples, rinsate blank samples, serial dilution analyses, and internal standard analyses. These QA/QC parameters are summarized below. In general, the laboratory and field QA/QC parameters were considered acceptable.

Holding Times/Temperatures

All samples were analyzed within holding time limits. All samples were maintained within temperature QC limits.

Laboratory Blanks

All laboratory blanks met the frequency criteria. No potential contaminants of concern were detected in the laboratory blanks.

Rinsate Blanks

The water rinsate blanks were collected from a deionized water source. Three water rinsate blank samples were collected during the field event; therefore, meeting the frequency criteria of one per 20 samples collected with non-dedicated equipment. Antimony, benzo(g,h,i)perylene, bis(2-ethylhexyl)phthalate, chloroform, 2-methylnaphthalene, naphthalene, phenanthrene, and zinc were detected in one or more rinsate blanks and resulted in sample qualifications. Sample results were qualified as not detected (U) if the associated sample result was less than five times the rinsate blank concentration, including antimony and zinc in samples MP04GW and SP02SW, naphthalene, bis(2-ethylhexyl)phthalate, phenanthrene, and benzo(g,h,i)perylene in sample MP01GW, naphthalene in samples MP01SB15, MP01SB20, MP01SB25, MP01SB30, MP01SB35, and MP04SB10, 2-methylnaphthalene in sample MP01SB30, and phenanthrene in samples MP01SB35 and MP01SB10.

Trip Blanks

The water trip blanks were collected from a deionized water source. Six water trip blank samples were collected during the field event; therefore, meeting the frequency criteria of one per cooler per 20 NWTPH-GX or VOC samples. Chloroform, cis- and trans-1,3-dichloropropene, methylene chloride, and toluene were detected in one or more trip blanks. Sample results were qualified as not detected (U) if the associated sample result was less than five times the trip blank concentration, including toluene in sample MP03SB10 and chloroform in samples RS02WT, SP03SB30, and SP03SB40.

Serial Dilution

Serial dilution analyses were performed at a frequency of one per 20 samples per matrix, meeting QC frequency criteria. A total of 171 results (approximately 1.8% of the data) were qualified as estimated quantities (J or UJ) based on serial dilution outliers.

Internal Standard

Internal standard analyses were performed at the appropriate frequency for organic samples. A total of 112 results (approximately 1.2% of the data) were qualified as estimated quantities (J or UJ) based on internal standard outliers.



ecology and environment, inc.

International Specialists in the Environment

720 Third Avenue, Suite 1700, Seattle, WA 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: September 9, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Summary Check,
Bremerton Gasworks Properties, Bremerton, Washington**

REF: TDD: 07-01-0008 PAN: 002233.0178.01BR

The data summary check of soil and water samples collected from the Bremerton Gasworks Properties site located in Bremerton, Washington, has been completed. Analysis for gasoline-range total petroleum hydrocarbons (Ecology method NWTPH-Gx) was performed by the Manchester Environmental Laboratory, Port Orchard, Washington.

No discrepancies were noted. The secondary reviewer applied "Q" bias qualifiers to estimated quantities to indicate that the results were less than the sample quantitation limit.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for Total Petroleum Hydrocarbon - Gasoline Range Analysis
Results from the USEPA Region 10 Laboratory

PROJECT NAME: Bremerton Gasworks Targeted Brownfields Assessment

PROJECT CODE: TEC-916A

FROM: Gerald Dodo, Chemistry Supervisor
Office of Environmental Assessment, USEPA Region 10 Laboratory

TO: Joanne Labaw, SAM
Office of Environmental Cleanup, USEPA Region 10

CC: Renee Nordeen, Ecology and Environment

I have authorized release of this data package. Attached you will find the Total Petroleum Hydrocarbon - Gasoline Range results for the Bremerton Gasworks Targeted Brownfields Assessment for the samples collected 05/14/08 through 06/05/08. This is the last of the data associated with this project. For further information regarding the attached data, contact Peggy Knight at 360-871-8713.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM
FOR ORGANIC CHEMICAL ANALYSES

Date: July 30, 2008

To: Joanne Labaw, SAM
Office of Environmental Cleanup, USEPA Region 10

From: Peggy Knight, Chemist
Office of Environmental Assessment, USEPA Region 10 Laboratory

Subject: Quality Assurance Review for the Total Petroleum Hydrocarbon - Gasoline Range Analysis of Samples from the Bremerton Gasworks Targeted Brownfields Assessment Project

Project Code: TEC-916A
Account Code: 0809BT10P402D43CG000LA00

CC: Renee Nordeen, Ecology and Environment

The following is a quality assurance review of the data for total petroleum hydrocarbon - gasoline range (TPH-G) analysis of water and soil samples from the above referenced site. Sample preparations were performed by the EPA Region 10 Laboratory staff using a Manchester draft SOP based on Washington State Department of Ecology Method NWTPH-Gx (GC/MS).

This review was conducted for the following samples:

08204401	08204402	08204403	08204404	08204405	08204406	08204407
08204422	08204423	08204424	08204425	08204426	08204427	08204429
08204430	08204431	08204432	08204433	08204434	08204435	08204436
08204439	08204440	08204441	08204442	08204443	08204444	08204445
08204446	08204447	08204448	08204449	08204450	08204451	08204452
08204454	08204455	08204456	08204457	08204463	08204464	08204465
08204466	08204467	08204468	08204400	08214409	08214410	08214411
08214412	08214413	08214414	08214415	08214416	08214417	08214419
08214468	08214469	08214458	08234459	08234460	08234461	08234462
08234470						

1. Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). No excursions were required from the method Standard Operating Procedure.

The quality control measures which did not meet Laboratory/QAPP criteria are annotated in the title of each affected subsection with "*Laboratory/QAPP Criteria Not Met*".

The Region 10 Laboratory's Quality System has been accredited to the standards of the National Environmental Laboratory Accreditation Conference (NELAC).

2. Sample Transport and Receipt

Upon sample receipt, no conditions were noted that would impact data quality. Sample 08204453 did not have a sample vial for TPH-G analysis.

3. Sample Holding Times

The concentration of an analyte in a sample or extract of a sample may increase or decrease over time depending on the nature of the analyte. All samples were prepared and analyzed within holding time criteria.

4. Sample Preparation

Samples were prepared according to the method.

5. Initial Calibration/Continuing Calibration Verification (CCV) - *Laboratory/QAPP Criteria Not Met*

Initial calibrations were performed on 05/01/08 and on 06/10/08 for TPH-G (unleaded gasoline composite). Coefficients of Determination for the linear calibration function met the SOP criteria and were ≥ 0.995 .

The CCV met the criteria for frequency of analysis and the percent accuracies of 80-120% of the true value with the exception of the end CCV LCS8164A3 on June 12, which is also a laboratory control sample (123%). The value is likely slightly high due to carryover from a previous run containing creosote. This did not affect sample results.

6. Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

LCS/LCSD are generated to provide information on the accuracy and precision of the analytical method and the laboratory performance. The LCS/LCSD recoveries were within the criteria of 50-150% with a relative percent difference (RPD) of ≤ 50 .

7. Blank Analysis - *Laboratory/QAPP Criteria Not Met*

Method blanks were analyzed with each analytical sequence to evaluate the potential for laboratory contamination and effects on the sample results. TPH-G was not detected in the blanks above the reporting limit with the exception of OBW8164A3, which is likely due to a small carryover from the previous run which contained creosote. No sample results were affected.

8. Surrogate Spikes

Surrogate recoveries are used to help in the evaluation of laboratory performance on individual samples. The surrogate compound used for these analyses was 1,4-difluorobenzene. All surrogate recoveries for the samples were within the criteria of 50-150% with the exception of sample 08214400 which had a recovery of 48%. This appears to have been a matrix effect as a reanalysis of the sample also yielded low surrogate recoveries. The value for TPH-G is qualified "J" as an estimate for this sample due to low surrogate recovery.

9. Matrix Spike/Matrix Spike Duplicate Analysis (MS/MSD)

MS/MSD analyses are performed to provide information on the effects of sample matrices toward the analytical method. An MS/MSD analysis was performed using water samples 08204439 (S1/S2) and 08234462 (S1/S2). The recoveries met the criteria of 50-150% with a RPD of ≤ 50 . Matrix spikes were requested for sample 08204401; however only enough volume was supplied for one matrix spike (S1).

10. Compound Quantitation

The initial calibration functions were used for calculations. Reported quantitation limits were based on the initial calibration standards and sample size used for the analysis.

Creosote was identified based on chromatograms and spectra. The identified compounds indene, indane, and benzothiophenes are all indicative the creosote is coal-based. Only samples 08204447 and 08214400 contain target analytes which may have originated from gasoline. The other samples have elevated reporting limits reflecting the interference from creosote.

Manual integrations were sometimes necessary due to the creosote present in some samples. The integrations have been reviewed and found to comply with acceptable integration practices.

11. Identification

Many samples contained individual peaks thought to be target volatile analytes. Although these components were within the TPH-G (gasoline range organics) range, these samples were reported as non-detected, "U", at the reported concentration. See Volatiles results for more information.

The following were noted during the analysis.

Sample 08204422 contained early eluting peaks in the gasoline range which were from creosote.
Sample 08204423 contained late eluting peaks in the gasoline range which were from creosote.
Sample 08204446 contained early eluting peaks in the gasoline range which were from creosote.
Sample 08204447 contained benzene, toluene, and xylenes, but no other gasoline components.
Sample 08204448 contained early eluting peaks in the gasoline range which were from creosote.
Sample 08204449 contained early eluting peaks in the gasoline range which were from creosote.
Sample 08204450 contained mostly naphthalene in the gasoline range from creosote.
Sample 08214400 had low surrogate recovery, probably due to matrix.
Sample 08234458 contained mostly naphthalene in the gasoline range from creosote.
Sample 08234460 contained late eluting peaks in the gasoline range which were from creosote.

12. Data Qualifiers

All requirements for data qualifiers from the preceding sections were accumulated. Each sample data summary sheet and each compound was checked for positive or negative results. From this, the overall need for data qualifiers for each analysis was determined. In cases where more than one of the preceding sections

required data qualifiers, the most restrictive qualifier has been added to the data.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data quality objectives. Should questions arise regarding the data, contact Peggy Knight at the Region 10 Laboratory, phone number (360) 871 - 8713.

Qualifier	Definition
U	The analyte was not detected at or above the reported value.
J	The identification of the analyte is acceptable; the reported value is an estimate.
UJ	The analyte was not detected at or above the reported value. The reported value is an estimate.

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 1 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01GW

Collected: 5/14/08 13:30:00
Matrix: Liquid
Sample Number: 08204401
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : A9
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/17/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	27	ug/L	JQ
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08204401 Reg sample

BREMERTON-010763

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 2 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/14/08 13:30:00
Matrix: Liquid
Sample Number: 08204401
Type: Matrix Spike

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : A5		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/23/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Surrogate(s) : 540363	Benzene, 1,4-difluoro-	98	%Rec	
*90076	Gasoline	84	%Rec	

08204401 Matrix Spike

BREMERTON-010764

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB05

Collected: 5/14/08 8:25:00
Matrix: Solid
Sample Number: 08204402
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N10		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	7	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	95	%Rec	

08204402 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB10

Collected: 5/14/08 8:40:00
Matrix: Solid
Sample Number: 08204403
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N5		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	7	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	94	%Rec	

08204403 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB15

Collected: 5/14/08 8:50:00
Matrix: Solid
Sample Number: 08204404
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	7	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08204404 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB20

Collected: 5/14/08 9:25:00
Matrix: Solid
Sample Number: 08204405
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N5		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	7	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08204405 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB25

Collected: 5/14/08 9:35:00
Matrix: Solid
Sample Number: 08204406
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N2		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08204406 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB30

Collected: 5/14/08 9:45:00
Matrix: Solid
Sample Number: 08204407
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N2
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/23/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	96	%Rec	

08204407 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04GW

Collected: 5/15/08 10:15:00
Matrix: Liquid
Sample Number: 08204422
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A1		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	1300	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	92	%Rec	

08204422 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 10 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB05

Collected: 5/13/08 9:40:00
Matrix: Solid
Sample Number: 08204423
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N5		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	5	mg/kg	JQ
Surrogate(s):	540363 Benzene, 1,4-difluoro-	101	%Rec	

08204423 Reg sample

BREMERTON-010772

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 11 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB10

Collected: 5/13/08 9:55:00
Matrix: Solid
Sample Number: 08204424
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	7	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	103	%Rec	

08204424 Reg sample

BREMERTON-010773

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 12 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB15

Collected: 5/13/08 10:00:00
Matrix: Solid
Sample Number: 08204425
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	6	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	102	%Rec	

08204425 Reg sample

BREMERTON-010774

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 13 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB20

Collected: 5/13/08 10:10:00
Matrix: Solid
Sample Number: 08204426
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N1		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	100	%Rec	

08204426 Reg sample

BREMERTON-010775

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB25

Collected: 5/13/08 10:30:00
Matrix: Solid
Sample Number: 08204427
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N1		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	102	%Rec	

08204427 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: RS01WT

Collected: 5/13/08 15:30:00
Matrix: Liquid
Sample Number: 08204429
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/15/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	88	%Rec	

08204429 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: RS02WT

Collected: 5/14/08 9:00:00
Matrix: Liquid
Sample Number: 08204430
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/15/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	82	%Rec	

08204430 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: RS03WT

Collected: 5/15/08 14:00:00
Matrix: Liquid
Sample Number: 08204431
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A1		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	90	%Rec	

08204431 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01GW

Collected: 5/12/08 14:45:00
Matrix: Liquid
Sample Number: 08204432
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : A5		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/15/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	80	%Rec	

08204432 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01SB05

Collected: 5/12/08 13:55:00
Matrix: Solid
Sample Number: 08204433
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N8		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	5	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	120	%Rec	

08204433 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01SB10

Collected: 5/12/08 14:05:00
Matrix: Solid
Sample Number: 08204434
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	6	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	127	%Rec	

08204434 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01SB15

Collected: 5/12/08 14:15:00
Matrix: Solid
Sample Number: 08204435
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N5		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	5	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	125	%Rec	

08204435 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01SB20

Collected: 5/12/08 14:25:00
Matrix: Solid
Sample Number: 08204436
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N2		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	5	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	132	%Rec	

08204436 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02GW

Collected: 5/15/08 12:10:00
Matrix: Liquid
Sample Number: 08204439
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A1		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	89	%Rec	

08204439 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/15/08 12:10:00
Matrix: Liquid
Sample Number: 08204439
Type: Matrix Spike

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : A2		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/23/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	100	%Rec	
*90076	Gasoline	87	%Rec	

08204439 Matrix Spike

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/15/08 12:10:00
Matrix: Liquid
Sample Number: 08204439
Type: Matrix Spike Dupl

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	96	%Rec	
*90076	Gasoline	84	%Rec	

08204439 Matrix Spike Du

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB05

Collected: 5/12/08 9:22:00
Matrix: Solid
Sample Number: 08204440
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N2		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	129	%Rec	

08204440 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB10

Collected: 5/12/08 9:36:00
Matrix: Solid
Sample Number: 08204441
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N5		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	131	%Rec	

08204441 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB15

Collected: 5/12/08 9:45:00
Matrix: Solid
Sample Number: 08204442
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N5		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	7	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	132	%Rec	

08204442 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB20

Collected: 5/12/08 10:05:00
Matrix: Solid
Sample Number: 08204443
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	133	%Rec	

08204443 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 30 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB25

Collected: 5/12/08 10:15:00
Matrix: Solid
Sample Number: 08204444
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : N5		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/16/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Analytes(s): *90076	Gasoline	6	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	129	%Rec	

08204444 Reg sample

BREMERTON-010792

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 31 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB30

Collected: 5/12/08 10:25:00
Matrix: Solid
Sample Number: 08204445
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N2		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	129	%Rec	

08204445 Reg sample

BREMERTON-010793

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 32 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03GW

Collected: 5/12/08 18:00:00
Matrix: Liquid
Sample Number: 08204446
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : A3
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/15/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	40000	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	91	%Rec	

08204446 Reg sample

BREMERTON-010794

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 33 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB05

Collected: 5/12/08 16:05:00
Matrix: Solid
Sample Number: 08204447
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N5
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/16/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	200	mg/kg	JQ
Surrogate(s):	540363 Benzene, 1,4-difluoro-	139	%Rec	

08204447 Reg sample

BREMERTON-010795

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 34 of 111

Project Code:	TEC-916A	Collected:	5/12/08	16:15:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204448	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	SP03SB10			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N3
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/27/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s): *90076	Gasoline	30000	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	93	%Rec	

08204448 Reg sample

BREMERTON-010796

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 35 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/12/08 16:15:00
Matrix: Solid
Sample Number: 08204448
Type: Duplicate

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : N2		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/27/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Analytes(s): *90076	Gasoline	40000	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	98	%Rec	

08204448 Duplicate

BREMERTON-010797

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 36 of 111

Project Code:	TEC-916A	Collected:	5/12/08	16:30:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204449	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	SP03SB15			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N3
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/24/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s): *90076	Gasoline	10	mg/kg	
Surrogate(s): 540363	Benzene, 1,4-difluoro-	88	%Rec	

08204449 Reg sample

BREMERTON-010798

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 37 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB20

Collected: 5/12/08 16:45:00
Matrix: Solid
Sample Number: 08204450
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N2
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/17/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	9	mg/kg	
Surrogate(s):	540363 Benzene, 1,4-difluoro-	133	%Rec	

08204450 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB25

Collected: 5/12/08 17:00:00
Matrix: Solid
Sample Number: 08204451
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N2		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/17/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	6	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	96	%Rec	

08204451 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB30

Collected: 5/12/08 17:00:00
Matrix: Solid
Sample Number: 08204452
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/17/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	11	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	100	%Rec	

08204452 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: TB02WT

Collected: 5/12/08 8:38:00
Matrix: Liquid
Sample Number: 08204454
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : A2		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/16/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	91	%Rec	

08204454 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: TB03WT

Collected: 5/13/08 9:15:00
Matrix: Liquid
Sample Number: 08204455
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	90	%Rec	

08204455 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 42 of 111

Project Code:	TEC-916A	Collected:	5/14/08	7:55:00
Project Name:	BREMERTON GASWORKS	Matrix:	Liquid	
Project Officer:	JOANNE LABAW	Sample Number:	08204456	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	TB04WT			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : A1
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/15/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08204456 Reg sample

BREMERTON-010804

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 43 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: TB05WT

Collected: 5/15/08 9:00:00
Matrix: Liquid
Sample Number: 08204457
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A1		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s) : 540363	Benzene, 1,4-difluoro-	89	%Rec	

08204457 Reg sample

BREMERTON-010805

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 44 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB35

Collected: 5/12/08 17:20:00
Matrix: Solid
Sample Number: 08204463
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N5		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/17/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	8	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	95	%Rec	

08204463 Reg sample

BREMERTON-010806

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 45 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB40

Collected: 5/12/08 17:30:00
Matrix: Solid
Sample Number: 08204464
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N3
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/17/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08204464 Reg sample

BREMERTON-010807

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code:	TEC-916A	Collected:	5/12/08	17:40:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204465	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	SP03SB45			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N2
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/17/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s): *90076	Gasoline	12	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	97	%Rec	

08204465 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB35

Collected: 5/13/08 11:00:00
Matrix: Solid
Sample Number: 08204466
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N5
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/27/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	102	%Rec	

08204466 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 48 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB40

Collected: 5/13/08 11:25:00
Matrix: Solid
Sample Number: 08204467
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N5
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/27/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s): *90076	Gasoline	6	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	101	%Rec	

08204467 Reg sample

BREMERTON-010810

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB35

Collected: 5/14/08 10:00:00
Matrix: Solid
Sample Number: 08204468
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N2
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/27/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	100	%Rec	

08204468 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code:	TEC-916A	Collected:	5/19/08	12:40:00
Project Name:	BREMERTON GASWORKS	Matrix:	Liquid	
Project Officer:	JOANNE LABAW	Sample Number:	08214400	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	ID01WT			

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : A1
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/24/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	34	ug/L	JQ
Surrogate(s):	540363 Benzene, 1,4-difluoro-	48	%Rec	

08214400 Reg sample

BREMERTON-010

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 51 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP02SB05

Collected: 5/19/08 11:15:00
Matrix: Solid
Sample Number: 08214409
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N3
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/23/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	98	%Rec	

08214409 Reg sample

BREMERTON-010813

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP02SB10

Collected: 5/19/08 11:25:00
Matrix: Solid
Sample Number: 08214410
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	7	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	96	%Rec	

08214410 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 53 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP02SB15

Collected: 5/19/08 11:35:00
Matrix: Solid
Sample Number: 08214411
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N5		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08214411 Reg sample

BREMERTON-010815

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 54 of 111

Project Code:	TEC-916A	Collected:	5/19/08	11:45:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08214412	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	MP02SB20			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N2
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/24/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08214412 Reg sample

BREMERTON-010816

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 55 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP02SB25

Collected: 5/19/08 11:50:00
Matrix: Solid
Sample Number: 08214413
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N3
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/24/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s): *90076	Gasoline	5	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	99	%Rec	

08214413 Reg sample

BREMERTON-010817

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP02SB30

Collected: 5/19/08 12:05:00
Matrix: Solid
Sample Number: 08214414
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N2		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/24/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

08214414 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP03GW

Collected: 5/19/08 10:30:00
Matrix: Liquid
Sample Number: 08214415
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A1		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	97	%Rec	

08214415 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 58 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP03SB05

Collected: 5/19/08 8:15:00
Matrix: Solid
Sample Number: 08214416
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : N5		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/27/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Analytes(s): *90076	Gasoline	8	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	98	%Rec	

08214416 Reg sample

BREMERTON-010820

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 59 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP03SB10

Collected: 5/19/08 8:30:00
Matrix: Solid
Sample Number: 08214417
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N2
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/27/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	5	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	98	%Rec	

08214417 Reg sample

BREMERTON-010821

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 60 of 111

Project Code:	TEC-916A	Collected:	5/19/08	9:00:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08214419	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	MP03SB20			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N5
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/27/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	99	%Rec	

08214419 Reg sample

BREMERTON-010822

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 61 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: TB06WT

Collected: 5/19/08 7:45:00
Matrix: Liquid
Sample Number: 08214468
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : N2		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/23/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	89	%Rec	

08214468 Reg sample

BREMERTON-01082

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code:	TEC-916A	Collected:	5/19/08	12:20:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08214469	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	ID01SB			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N3
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/27/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s): *90076	Gasoline	5	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	102	%Rec	

08214469 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 63 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: WN01SD

Collected: 6/4/08 15:24:00
Matrix: Solid
Sample Number: 08234458
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N3		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/12/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	450	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	113	%Rec	

08234458 Reg sample

BREMERTON-010825

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 64 of 111

Project Code:	TEC-916A	Collected:	6/4/08	13:50:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08234459	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	WN02SD			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N3
Method	: NWTPH-G Gasoline range organics			Analysis Date : 6/12/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	6	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	111	%Rec	

08234459 Reg sample

BREMERTON-010826

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 65 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: WN03SD

Collected: 6/4/08 14:08:00
Matrix: Solid
Sample Number: 08234460
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : N2		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/12/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	25	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	109	%Rec	

08234460 Reg sample

BREMERTON-010827

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code:	TEC-916A	Collected:	6/4/08	14:31:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08234461	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	WN04SD			

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N2
Method	: NWTPH-G Gasoline range organics			Analysis Date : 6/12/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Analytes(s):	*90076 Gasoline	5	mg/kg	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	111	%Rec	

08234461 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 67 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: WN05SD

Collected: 6/4/08 14:55:00
Matrix: Solid
Sample Number: 08234462
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : N2		
Method : NWTPH-G Gasoline range organics		Analysis Date : 6/12/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Analytes(s): *90076	Gasoline	5	mg/kg	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	107	%Rec	

08234462 Reg sample

BREMERTON-01082

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 68 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 6/4/08 14:55:00
Matrix: Solid
Sample Number: 08234462
Type: Matrix Spike

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID : N2
Method	: NWTPH-G Gasoline range organics			Analysis Date : 6/12/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Surrogate(s): 540363	Benzene, 1,4-difluoro-	114	%Rec	
*90076	Gasoline	117	%Rec	

08234462 Matrix Spike

BREMERTON-010830

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 69 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 6/4/08 14:55:00
Matrix: Solid
Sample Number: 08234462
Type: Matrix Spike Dupl

		Result	Units	Olfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID : N2		
Method : NWTPH-G Gasoline range organics		Analysis Date : 6/12/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Surrogate(s) : 540363 Benzene, 1,4-difluoro-		113	%Rec	
*90076 Gasoline		114	%Rec	

08234462 Matrix Spike Du

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: TB07WT

Collected: 6/4/08 7:30:00
Matrix: Liquid
Sample Number: 08234470
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID : A1		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/11/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	94	%Rec	

08234470 Reg sample

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 71 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8136A1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			Container ID :
Method	: NWTPH-G Gasoline range organics			Analysis Date : 5/15/2008
Prep Method	: NWTPH-G Gasoline range organics			Prep Date :
Surrogate(s) :	540363 Benzene, 1,4-difluoro-	95	%Rec	
	*90076 Gasoline	94	%Rec	

LCS8136A1 LCS

BREMERTON-010833

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 72 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8136A2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/15/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s) :	540363 Benzene, 1,4-difluoro-	94	%Rec	
	*90076 Gasoline	94	%Rec	

LCS8136A2 LCSD

BREMERTON-010834

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 73 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8136A3
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/15/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s) : 540363	Benzene, 1,4-difluoro-	93	%Rec	
*90076	Gasoline	91	%Rec	

LCS8136A3 LCS

BREMERTON-010835

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8136A4
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter :	Total Petroleum Hyd, Gasoline	Container ID :		
Method :	NWTPH-G Gasoline range organics	Analysis Date : 5/15/2008		
Prep Method :	NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s) :	540363 Benzene, 1,4-difluoro-	90	%Rec	
	*90076 Gasoline	88	%Rec	

LCS8136A4 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8136B1
Type: LCS

		Result	Units	Olfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID :		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/15/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Surrogate(s) : 540363	Benzene, 1,4-difluoro-	86	%Rec	
*90076	Gasoline	79	%Rec	

LCS8136B1 LCS

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 76 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8136B2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/15/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s) : 540363	Benzene, 1,4-difluoro-	89	%Rec	
*90076	Gasoline	86	%Rec	

LCS8136B2 LCSD

BREMERTON-010838

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8137A1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	106	%Rec	
*90076	Gasoline	100	%Rec	

LCS8137A1 LCS

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8137A2
Type: LCSD

		Result	Units	Olfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID :		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/16/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Surrogate(s) : 540363	Benzene, 1,4-difluoro-	96	%Rec	
*90076	Gasoline	92	%Rec	

LCS8137A2 LCSD

BREMERTON-010

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 79 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8137A3
Type: LCS

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID :		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/16/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	106	%Rec	
*90076	Gasoline	100	%Rec	

LCS8137A3 LCS

BREMERTON-01084

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8137A4
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	103	%Rec	
*90076	Gasoline	92	%Rec	

LCS8137A4 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8137B1
Type: LCS

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s) : 540363	Benzene, 1,4-difluoro-	90	%Rec	
*90076	Gasoline	93	%Rec	

LCS8137B1 LCS

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 82 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8137B2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s) : 540363	Benzene, 1,4-difluoro-	91	%Rec	
*90076	Gasoline	103	%Rec	

LCS8137B2 LCSD

BREMERTON-010844

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8144A1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID :		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/23/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Surrogate(s) : 540363 Benzene, 1,4-difluoro-		113	%Rec	
*90076 Gasoline		98	%Rec	

LCS8144A1 LCS

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8144A2
Type: LCSD

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/23/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	107	%Rec	
*90076	Gasoline	90	%Rec	

LCS8144A2 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8145A1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID :		
Method : NWTPH-G Gasoline range organics		Analysis Date : 5/24/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Surrogate(s) : 540363 Benzene, 1,4-difluoro-		101	%Rec	
*90076 Gasoline		93	%Rec	

LCS8145A1 LCS

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8145A2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			
Method	: NWTPH-G Gasoline range organics			
Prep Method	: NWTPH-G Gasoline range organics			
Surrogate(s)	540363 Benzene, 1,4-difluoro-	100	%Rec	
	*90076 Gasoline	98	%Rec	

Container ID :
Analysis Date : 5/24/2008
Prep Date :

LCS8145A2 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8148A1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s) :	540363 Benzene, 1,4-difluoro-	111	%Rec	
	*90076 Gasoline	89	%Rec	

LCS8148A1 LCS

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8148A2
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	103	%Rec	
*90076	Gasoline	83	%Rec	

LCS8148A2 LCS

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8162A1
Type: LCS

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/10/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	109	%Rec	
*90076	Gasoline	112	%Rec	

LCS8162A1 LCS

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 90 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8162A2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/10/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	109	%Rec	
*90076	Gasoline	114	%Rec	

LCS8162A2 LCSD

BREMERTON-010852

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8162A3
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/11/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s) :	540363 Benzene, 1,4-difluoro-	109	%Rec	
	*90076 Gasoline	106	%Rec	

LCS8162A3 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8162A4
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/11/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	103	%Rec	
*90076	Gasoline	99	%Rec	

LCS8162A4 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8164A1
Type: LCS

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/12/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s)	540363 Benzene, 1,4-difluoro-	112	%Rec	
	*90076 Gasoline	114	%Rec	

LCS8164A1 LCS

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8164A2
Type: LCSD

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/12/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s): 540363	Benzene, 1,4-difluoro-	119	%Rec	
*90076	Gasoline	116	%Rec	

LCS8164A2 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: LCS8164A3
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/12/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Surrogate(s)	540363 Benzene, 1,4-difluoro-	110	%Rec	
	*90076 Gasoline	123	%Rec	

LCS8164A3 LCS

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 96 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8136A1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/15/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	86	%Rec	

OBW8136A1 Blank

BREMERTON-010858

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8137A1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	109	%Rec	

OBW8137A1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8137A2
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/16/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	89	%Rec	

OBW8137A2 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8144A1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/24/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	115	%Rec	

OBW8144A1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8144A2
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/24/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	97	%Rec	

OBW8144A2 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8145A1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/25/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	97	%Rec	

OBW8145A1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8145A2
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/25/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	49	ug/L	J
Surrogate(s):	540363 Benzene, 1,4-difluoro-	93	%Rec	

OBW8145A2 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8148A1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	95	%Rec	

OBW8148A1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8148A2
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 5/27/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	94	%Rec	

OBW8148A2 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8162A1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/10/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s): *90076	Gasoline	50	ug/L	U
Surrogate(s): 540363	Benzene, 1,4-difluoro-	96	%Rec	

OBW8162A1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8162B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/10/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	93	%Rec	

OBW8162B1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8162B2
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/10/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	28	ug/L	J
Surrogate(s):	540363 Benzene, 1,4-difluoro-	100	%Rec	

OBW8162B2 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8164A1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/12/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	28	ug/L	J
Surrogate(s):	540363 Benzene, 1,4-difluoro-	102	%Rec	

OBW8164A1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8164A3
Type: Blank

		Result	Units	Olfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline	Container ID :		
Method	: NWTPH-G Gasoline range organics	Analysis Date : 6/12/2008		
Prep Method	: NWTPH-G Gasoline range organics	Prep Date :		
Analytes(s):	*90076 Gasoline	65	ug/L	
Surrogate(s):	540363 Benzene, 1,4-difluoro-	117	%Rec	

OBW8164A3 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8164A4
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Total Petroleum Hyd, Gasoline			
Method	: NWTPH-G Gasoline range organics			
Prep Method	: NWTPH-G Gasoline range organics			
Analytes(s):	*90076 Gasoline	50	ug/L	U
Surrogate(s):	540363 Benzene, 1,4-difluoro-	109	%Rec	

Container ID :

Analysis Date : 6/12/2008

Prep Date :

OBW8164A4 Blank

7/31/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 111 of 111

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8164A5
Type: Blank

		Result	Units	Qlfr
GC				
Parameter : Total Petroleum Hyd, Gasoline		Container ID :		
Method : NWTPH-G Gasoline range organics		Analysis Date : 6/12/2008		
Prep Method : NWTPH-G Gasoline range organics		Prep Date :		
Analytes(s): *90076	Gasoline	109	ug/L	
Surrogate(s): 540363	Benzene, 1,4-difluoro-	105	%Rec	

OBW8164A5 Blank



ecology and environment, inc.

International Specialists in the Environment

720 Third Avenue, Suite 1700, Seattle, WA 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: September 9, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Summary Check,
Bremerton Gasworks Properties, Bremerton, Washington**

REF: TDD: 07-01-0008 PAN: 002233.0178.01BR

The data summary check of soil and water samples collected from the Bremerton Gasworks Properties site located in Bremerton, Washington, has been completed. Analysis for diesel-range total petroleum hydrocarbons (Ecology method NWTPH-Dx) was performed by the Manchester Environmental Laboratory, Port Orchard, Washington.

No discrepancies were noted.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for Total Petroleum Hydrocarbon - Diesel Range Extended
Analysis Results from the USEPA Region 10 Laboratory

PROJECT NAME: Bremerton Gasworks Targeted Brownfields Assessment

PROJECT CODE: TEC-916A

FROM: Gerald Dodo, Chemistry Supervisor
Office of Environmental Assessment, USEPA Region 10 Laboratory

TO: Joanne Labaw, SAM
Office of Environmental Cleanup, USEPA Region 10

CC: Renee Nordeen, Ecology and Environment

I have authorized release of this data package. Attached you will find the Total Petroleum Hydrocarbon - Diesel Range Extended results for the Bremerton Gasworks Targeted Brownfields Assessment for the samples collected 05/12/08 through 06/04/08. For further information regarding the attached data, contact Peggy Knight at 360-871-8713. For the schedule for the remaining analyses, contact Gerald Dodo at 360-871-8728.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM
FOR ORGANIC CHEMICAL ANALYSES

Date: June 26, 2008

To: Joanne Labaw, SAM
Office of Environmental Cleanup, USEPA Region 10

From: Peggy Knight, Chemist
Office of Environmental Assessment, USEPA Region 10 Laboratory

Subject: Quality Assurance Review for the Total Petroleum Hydrocarbon - Diesel Range Extended Analysis of Samples from the Bremerton Gasworks Targeted Brownfields Assessment Project

Project Code: TEC-916A
Account Code: 0809BT10P402D43CG000LA00

CC: Renee Nordeen, Ecology and Environment

The following is a quality assurance review of the data for total petroleum hydrocarbon - diesel range extended (TPH-Dx) analysis of water and soil samples from the above referenced site. Sample preparations were performed by the EPA Region 10 Laboratory staff using Manchester SOPs based on methods from SW846 (3541 for soil extraction; 3535 for water extraction) and were analyzed using a Manchester SOP based on Washington State Department of Ecology Method NWTPH-Dx.

This review was conducted for the following samples:

08204401	08204402	08204403	08204404	08204405	08204406	08204407
08204422	08204423	08204424	08204425	08204426	08204427	08204429
08204430	08204431	08204432	08204433	08204434	08204435	08204436
08204439	08204440	08204441	08204442	08204443	08204444	08204445
08204446	08204447	08204448	08204449	08204450	08204451	08204452
08204463	08204464	08204465	08204466	08204467	08204468	08214400
08214409	08214410	08214411	08214412	08214413	08214414	08214415
08214416	08214417	08214419	08214469	08234458	08234459	08234460
08234461	08234462					

1. Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). No excursions were required from the method Standard Operating Procedure.

The quality control measures which did not meet Laboratory/QAPP criteria are annotated in the title of each affected subsection with "*Laboratory/QAPP Criteria Not Met*".

For those tests for which the EPA Region 10 Laboratory has been accredited by the National Environmental Laboratory Accreditation Conference (NELAC), all requirements of the current NELAC Standard have been met.

2. Sample Transport and Receipt

Upon sample receipt, no conditions were noted that would impact data quality. Samples 08214400, 08214409 through 08214417, 08214468 and 08214469 were received at ambient temperature and not $\leq 6^{\circ}\text{C}$; however, sample transport immediately followed sampling and the short time in sealed containers is not expected to adversely affect TPH-Dx.

3. Sample Holding Times

The concentration of an analyte in a sample or extract of a sample may increase or decrease over time depending on the nature of the analyte. The holding time maximum criteria applied for the extraction of water samples is 7 days from the time of collection. Extracts have a holding time maximum of 40 days from the time of preparation. All samples were extracted and analyzed within these criteria.

4. Sample Preparation

Soil samples were prepared according to SOPs Or_P3541 using methylene chloride as solvent. Water samples were prepared according to Or_P018A. The water samples 08204401, 08204432, 08204446, and 08214415 all contained copious fine silt which hampered rinsing the container with solvent. Due to the probable low bias, positive results for these samples are qualified "JL", low bias, undetected results are qualified "UJ".

5. Initial Calibration/Continuing Calibration Verification (CCV) - Laboratory/QAPP Criteria Not Met

Initial calibrations were performed on 05/16/08 and 5/28/08 for #2 diesel and for motor oil. The correlation coefficients met the criteria for averaged R_f (Relative Standard Deviation of the R_f $< 10\%$) or linear calibration function (Coefficient of Determination ≥ 0.99).

The CCV met the criteria for frequency of analysis and the criteria of $\pm 15\%$ of the expected value with the exception of the dilution of sample 08204447, for motor oil only, which was 16 minutes outside the 12 hour criterion. This is not expected to have an effect on data quality as a CCV which followed the sample extract run 1.5 hours later, met the required criterion.

6. LCS/LCSD - Laboratory/QAPP Criteria Not Met

Data for laboratory control sample/laboratory control sample duplicates (LCS/LCSD) are generated to provide information on the accuracy and precision of the analytical method and the laboratory performance. The LCS/LCSD recoveries for the soils were within the SOP criteria of 50-150% with a relative percent difference (RPD) of ≤ 30 and the QAPP criteria of 60-140% with RPD ≤ 35 . The waters were within the SOP criteria of 50-150% with a relative percent difference (RPD) of ≤ 50 . The QAPP criteria of 60-140% with RPD $\leq 20\%$

were exceeded for one LCS/LCSD pair – OBW8141F1 and OBW8141F2 (66%, 91%; RPD 32.)

7. MS/MSD

Matrix spikes were done at the rate of 10% of the samples, including those samples requested for matrix spiking. All recoveries were within the SOP recovery criteria of 50-150% with RPD of 30% with the exception of the matrix spikes for sample 08234458, which contained native concentrations proportionately too high compared with the amount spiked to accurately evaluate the amount recovered. No MS/MSD recovery results were reported for this sample. All QAPP criteria (60-140% recovery with RPD 35% for soils and 20% for waters) were met.

8. Blank Analysis

Method blanks were prepared and analyzed with each sample extraction batch to evaluate the potential for laboratory contamination and effects on the sample results. Target analytes were not detected in the blanks.

9. Surrogate Spikes

Surrogate recoveries are used to help in the evaluation of laboratory performance on individual samples. The surrogate recoveries met the SOP criteria of 50-150% except for samples 08204447 and 08204448, in which the pentacosane could not be determined due to matrix interference.

10. Duplicate Sample Analysis

Duplicate sample analyses are performed to provide information on the precision, in the matrix of interest, of the analytical method. Duplicate analyses were performed using samples 08204402, 08204442, 08204452, 08235558, and 08234460. All results met the SOP relative percent difference (RPD) criteria of ≤ 30 . Sample 08204452 did not contain reportable levels of TPH-Dx.

11. Compound Identification/Quantitation

Diesel range organics above the reporting limit in samples 08204422, 08204446, and 08214400 were qualified as estimates due to the presence of interferences in the diesel range. Motor oil range organics above the reporting limit in sample 08204447 is qualified as an estimate as the retention time for the motor oil pattern was shifted compared with the motor oil standard. Sample 08204448 contained a large amount of sulfur, an estimated 10% by weight. The chromatogram suggests the presence of creosote, from which it is expected that polyaromatic hydrocarbons are present and contribute to the response in the diesel range. Both diesel and motor oil are qualified as estimates in samples 08204448, 08214415, 08234458, 08234459, 08234460, 08234461, and 08234462 due to overlap of response between the diesel and motor oil range.

Soil sample preparation included the method specified sulfuric acid/silica gel cleanup.

All manual integrations have been reviewed and found to comply with acceptable integration practices.

Chemical Abstract Service (CAS) numbers with a “*” indicates that the number was created at the Region 10 Laboratory due to lack of an existing one.

12. Data Qualifiers

All requirements for data qualifiers from the preceding sections were accumulated. Each sample data summary sheet and each compound was checked for positive or negative results. From this, the overall need for data qualifiers for each analysis was determined. In cases where more than one of the preceding sections required data qualifiers, the most restrictive qualifier has been added to the data.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data quality objectives. Should questions arise regarding the data, contact Peggy Knight at the Region 10 Laboratory, phone number (360) 871 - 8713.

Qualifier	Definition
U	The analyte was not detected at or above the reported value.
J	The identification of the analyte is acceptable; the reported value is an estimate.
UJ	The analyte was not detected at or above the reported value. The reported value is an estimate.
NA	Not Applicable, the parameter was not analyzed for, or there is no analytical result for this parameter. <u>No value is reported with this qualification.</u>

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 1 of 103

Project Code:	TEC-916A	Collected:	5/14/08	13:30:00
Project Name:	BREMERTON GASWORKS	Matrix:	Liquid	
Project Officer:	JOANNE LABAW	Sample Number:	08204401	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	MP01GW			

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : A1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/21/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/20/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	0.38	mg/L	JLW
	*400010 TPH-GC/Motor Oil Range Organic s	0.50	mg/L	UJ
Surrogate(s):	629992 Pentacosane	103	%Rec	

08204401 Reg sample

BREMERTON-010880

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB05

Collected: 5/14/08 8:25:00
Matrix: Solid
Sample Number: 08204402
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/30/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/16/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	110	mg/kg	
Surrogate(s):	629992 Pentacosane	140	%Rec	

08204402 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 3 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/14/08 8:25:00
Matrix: Solid
Sample Number: 08204402
Type: Duplicate

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/30/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/21/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	100	mg/kg	
Surrogate(s):	629992 Pentacosane	119	%Rec	

08204402 Duplicate

BREMERTON-010882

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 4 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/14/08 8:25:00
Matrix: Solid
Sample Number: 08204402
Type: Matrix Spike

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX	Diesel range organics		Analysis Date : 5/30/2008
Prep Method	: 3540/608	Soxhlet extraction		Prep Date : 5/21/2008
Surrogate(s)	629992	Pentacosane	123	%Rec
	*400009	TPH-GC/Diesel Range Organics	110	%Rec

08204402 Matrix Spike

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 5 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/14/08 8:25:00
Matrix: Solid
Sample Number: 08204402
Type: Matrix Spike Dupl

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/30/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Surrogate(s): 629992	Pentacosane	124	%Rec	
*400009	TPH-GC/Diesel Range Organics	119	%Rec	

08204402 Matrix Spike Du

BREMERTON-010884

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 6 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB10

Collected: 5/14/08 8:40:00
Matrix: Solid
Sample Number: 08204403
Type: Reg sample

		Result	Units	Qlfr	
GC					
Parameter	: Tot Petroleum Hyd, Diesel extended		Container ID : N1		
Method	: NWTPH-DX	Diesel range organics	Analysis Date : 5/22/2008		
Prep Method	: 3540/608	Soxhlet extraction	Prep Date : 5/16/2008		
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010	TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992	Pentacosane	78	%Rec	

08204403 Reg sample

BREMERTON-010885

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB15

Collected: 5/14/08 8:50:00
Matrix: Solid
Sample Number: 08204404
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/22/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/16/2008
Analytes(s): *400009	TPH-GC/Diesel Range Organics	25	mg/kg	U
*400010	TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s): 629992	Pentacosane	76	%Rec	

08204404 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 8 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB20

Collected: 5/14/08 9:25:00
Matrix: Solid
Sample Number: 08204405
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/22/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/16/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	75	%Rec	

08204405 Reg sample

BREMERTON-010887

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB25

Collected: 5/14/08 9:35:00
Matrix: Solid
Sample Number: 08204406
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/22/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/16/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	78	%Rec	

08204406 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 10 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP01SB30

Collected: 5/14/08 9:45:00
Matrix: Solid
Sample Number: 08204407
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/22/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/16/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	77	%Rec	

08204407 Reg sample

BREMERTON-010889

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 11 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04GW

Collected: 5/15/08 10:15:00
Matrix: Liquid
Sample Number: 08204422
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : A4		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/21/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/19/2008		
Analytes(s): *400009		TPH-GC/Diesel Range Organics	0.51	mg/L J
*400010		TPH-GC/Motor Oil Range Organic s	0.50	mg/L U
Surrogate(s): 629992		Pentacosane	81	%Rec

08204422 Reg sample

BREMERTON-010890

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB05

Collected: 5/13/08 9:40:00
Matrix: Solid
Sample Number: 08204423
Type: Reg sample

	Result	Units	Qlfr
GC			
Parameter : Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method : NWTPH-DX Diesel range organics			Analysis Date : 5/20/2008
Prep Method : 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Surrogate(s) : 629992 Pentacosane	138	%Rec	

08204423 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 13 of 103

Project Code:	TEC-916A	Collected:	5/13/08	9:40:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204423	
Account Code:	0809BT10P402D43CG000LA00	Type:	Dilution 1	
Station Description:				

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/20/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	1800	mg/kg	
	*400010 TPH-GC/Motor Oil Range Organic s	98	mg/kg	U

08204423 Dilution 1

BREMERTON-010892

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 14 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB10

Collected: 5/13/08 9:55:00
Matrix: Solid
Sample Number: 08204424
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/20/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	92	%Rec	

08204424 Reg sample

BREMERTON-010893

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB15

Collected: 5/13/08 10:00:00
Matrix: Solid
Sample Number: 08204425
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : N1		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/20/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/15/2008		
Analytes(s): *400009 TPH-GC/Diesel Range Organics		25	mg/kg	U
*400010 TPH-GC/Motor Oil Range Organic s		50	mg/kg	U
Surrogate(s): 629992 Pentacosane		95	%Rec	

08204425 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 16 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB20

Collected: 5/13/08 10:10:00
Matrix: Solid
Sample Number: 08204426
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	98	%Rec	

08204426 Reg sample

BREMERTON-010895

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB25

Collected: 5/13/08 10:30:00
Matrix: Solid
Sample Number: 08204427
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	101	%Rec	

08204427 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: RS01WT

Collected: 5/13/08 15:30:00
Matrix: Liquid
Sample Number: 08204429
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : A2		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/19/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	0.25	mg/L	U
	*400010 TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s):	629992 Pentacosane	96	%Rec	

08204429 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: RS02WT

Collected: 5/14/08 9:00:00
Matrix: Liquid
Sample Number: 08204430
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : A1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/19/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	0.25	mg/L	U
	*400010 TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s):	629992 Pentacosane	93	%Rec	

08204430 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: RS03WT

Collected: 5/15/08 14:00:00
Matrix: Liquid
Sample Number: 08204431
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : A4		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/19/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	0.25	mg/L	U
	*400010 TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s):	629992 Pentacosane	92	%Rec	

08204431 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 21 of 103

Project Code:	TEC-916A	Collected:	5/12/08	14:45:00
Project Name:	BREMERTON GASWORKS	Matrix:	Liquid	
Project Officer:	JOANNE LABAW	Sample Number:	08204432	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	SP01GW			

		Result	Units	Olfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : A1		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/21/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/20/2008		
Analytes(s): *400009	TPH-GC/Diesel Range Organics	0.25	mg/L	UJ
*400010	TPH-GC/Motor Oil Range Organic s	0.50	mg/L	UJ
Surrogate(s): 629992	Pentacosane	86	%Rec	

08204432 Reg sample

BREMERTON-010900

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 22 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01SB05

Collected: 5/12/08 13:55:00
Matrix: Solid
Sample Number: 08204433
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/19/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/14/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	107	%Rec	

08204433 Reg sample

BREMERTON-010901

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 23 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/12/08 13:55:00
Matrix: Solid
Sample Number: 08204433
Type: Matrix Spike

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Surrogate(s)	629992 Pentacosane	94	%Rec	
	*400009 TPH-GC/Diesel Range Organics	98	%Rec	

08204433 Matrix Spike

BREMERTON-010902

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 24 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/12/08 13:55:00
Matrix: Solid
Sample Number: 08204433
Type: Matrix Spike Dupl

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Surrogate(s) :	629992 Pentacosane	88	%Rec	
	*400009 TPH-GC/Diesel Range Organics	92	%Rec	

08204433 Matrix Spike Du

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 25 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01SB10

Collected: 5/12/08 14:05:00
Matrix: Solid
Sample Number: 08204434
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : N1		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/19/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/14/2008		
Analytes(s): *400009 TPH-GC/Diesel Range Organics		25	mg/kg	U
*400010 TPH-GC/Motor Oil Range Organic s		50	mg/kg	U
Surrogate(s): 629992 Pentacosane		112	%Rec	

08204434 Reg sample

BREMERTON-010904

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 26 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01SB15

Collected: 5/12/08 14:15:00
Matrix: Solid
Sample Number: 08204435
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/19/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/14/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	108	%Rec	

08204435 Reg sample

BREMERTON-010905

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 27 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP01SB20

Collected: 5/12/08 14:25:00
Matrix: Solid
Sample Number: 08204436
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : N1		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/19/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/14/2008		
Analytes(s): *400009 TPH-GC/Diesel Range Organics		25	mg/kg	U
*400010 TPH-GC/Motor Oil Range Organic s		50	mg/kg	U
Surrogate(s): 629992 Pentacosane		112	%Rec	

08204436 Reg sample

BREMERTON-010906

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 28 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02GW

Collected: 5/15/08 12:10:00
Matrix: Liquid
Sample Number: 08204439
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : A10
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/21/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/19/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	0.25	mg/L	U
	*400010 TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s):	629992 Pentacosane	95	%Rec	

08204439 Reg sample

BREMERTON-010907

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/15/08 12:10:00
Matrix: Liquid
Sample Number: 08204439
Type: Matrix Spike

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : A12		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/19/2008		
Surrogate(s) :	629992 Pentacosane	99	%Rec	
	*400009 TPH-GC/Diesel Range Organics	86	%Rec	

08204439 Matrix Spike

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 30 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/15/08 12:10:00
Matrix: Liquid
Sample Number: 08204439
Type: Matrix Spike Dupl

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : A13
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/21/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/19/2008
Surrogate(s)	629992 Pentacosane	103	%Rec	
	*400009 TPH-GC/Diesel Range Organics	88	%Rec	

08204439 Matrix Spike Du

BREMERTON-010909

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code:	TEC-916A	Collected:	5/12/08	9:22:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204440	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	SP02SB05			

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/19/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/14/2008		
Analytes(s): *400009	TPH-GC/Diesel Range Organics	25	mg/kg	U
*400010	TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s): 629992	Pentacosane	112	%Rec	

08204440 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB10

Collected: 5/12/08 9:36:00
Matrix: Solid
Sample Number: 08204441
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : N1		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/19/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/14/2008		
Analytes(s): *400009 TPH-GC/Diesel Range Organics		25	mg/kg	U
*400010 TPH-GC/Motor Oil Range Organic s		50	mg/kg	U
Surrogate(s): 629992 Pentacosane		115	%Rec	

08204441 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 33 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB15

Collected: 5/12/08 9:45:00
Matrix: Solid
Sample Number: 08204442
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/19/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/14/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	52	mg/kg	
Surrogate(s):	629992 Pentacosane	133	%Rec	

08204442 Reg sample

BREMERTON-010912

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: 08204442
Type: Duplicate

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/30/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s): *400009	TPH-GC/Diesel Range Organics	25	mg/kg	U
*400010	TPH-GC/Motor Oil Range Organic s	63	mg/kg	
Surrogate(s): 629992	Pentacosane	127	%Rec	

08204442 Duplicate

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 35 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/12/08 9:45:00
Matrix: Solid
Sample Number: 08204442
Type: Duplicate #2

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/30/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/23/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	63	mg/kg	
Surrogate(s):	629992 Pentacosane	127	%Rec	

08204442 Duplicate #2

BREMERTON-010914

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 36 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB20

Collected: 5/12/08 10:05:00
Matrix: Solid
Sample Number: 08204443
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/19/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/14/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	126	%Rec	

08204443 Reg sample

BREMERTON-010915

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 37 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB25

Collected: 5/12/08 10:15:00
Matrix: Solid
Sample Number: 08204444
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/19/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/14/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	130	%Rec	

08204444 Reg sample

BREMERTON-010916

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 38 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP02SB30

Collected: 5/12/08 10:25:00
Matrix: Solid
Sample Number: 08204445
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/20/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	104	%Rec	

08204445 Reg sample

BREMERTON-010917

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 39 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03GW

Collected: 5/12/08 18:00:00
Matrix: Liquid
Sample Number: 08204446
Type: Reg sample

	Result	Units	Qlfr
GC			
Parameter : Tot Petroleum Hyd, Diesel extended			Container ID : A1
Method : NWTPH-DX Diesel range organics			Analysis Date : 5/21/2008
Prep Method : 3540/608 Soxhlet extraction			Prep Date : 5/20/2008
Surrogate(s) : 629992 Pentacosane	105	%Rec	

08204446 Reg sample

BREMERTON-010918

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 40 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/12/08 18:00:00
Matrix: Liquid
Sample Number: 08204446
Type: Dilution 1

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : A1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/30/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/20/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	5.5	mg/L	JHmw
	*400010 TPH-GC/Motor Oil Range Organic s	0.44	mg/L	UJ

08204446 Dilution 1

BREMERTON-010919

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 41 of 103

Project Code:	TEC-916A	Collected:	5/12/08	16:05:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204447	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	SP03SB05			

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/22/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Analytes(s): 629992	Pentacosane			NA
*400009	TPH-GC/Diesel Range Organics	100	mg/kg	U
*400010	TPH-GC/Motor Oil Range Organic s	4700	mg/kg	J

08204447 Reg sample

BREMERTON-010920

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 42 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB10

Collected: 5/12/08 16:15:00
Matrix: Solid
Sample Number: 08204448
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/30/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	36000	mg/kg	J
	*400010 TPH-GC/Motor Oil Range Organic s	29000	mg/kg	J
Surrogate(s):	629992 Pentacosane	0	%Rec	

08204448 Reg sample

BREMERTON-010921

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 43 of 103

Project Code:	TEC-916A	Collected:	5/12/08	16:30:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204449	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	SP03SB15			

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/20/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	128	%Rec	

08204449 Reg sample

BREMERTON-010922

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 44 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB20

Collected: 5/12/08 16:45:00
Matrix: Solid
Sample Number: 08204450
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/20/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Analytes(s): *400009	TPH-GC/Diesel Range Organics	25	mg/kg	U
*400010	TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s) : 629992	Pentacosane	96	%Rec	

08204450 Reg sample

BREMERTON-010923

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB25

Collected: 5/12/08 17:00:00
Matrix: Solid
Sample Number: 08204451
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	97	%Rec	

08204451 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB30

Collected: 5/12/08 17:00:00
Matrix: Solid
Sample Number: 08204452
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/21/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	96	%Rec	

08204452 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 47 of 103

Project Code:	TEC-916A	Collected:	5/12/08	17:00:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204452	
Account Code:	0809BT10P402D43CG000LA00	Type:	Duplicate	
Station Description:				

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s): *400009	TPH-GC/Diesel Range Organics	25	mg/kg	U
*400010	TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s): 629992	Pentacosane	117	%Rec	

08204452 Duplicate

BREMERTON-010926

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 48 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB35

Collected: 5/12/08 17:20:00
Matrix: Solid
Sample Number: 08204463
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/20/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/15/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	99	%Rec	

08204463 Reg sample

BREMERTON-010927

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB40

Collected: 5/12/08 17:30:00
Matrix: Solid
Sample Number: 08204464
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Analytes(s): *400009	TPH-GC/Diesel Range Organics	25	mg/kg	U
*400010	TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s): 629992	Pentacosane	106	%Rec	

08204464 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 50 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: SP03SB45

Collected: 5/12/08 17:40:00
Matrix: Solid
Sample Number: 08204465
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	102	%Rec	

08204465 Reg sample

BREMERTON-010929

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 51 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/12/08 17:40:00
Matrix: Solid
Sample Number: 08204465
Type: Matrix Spike

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Surrogate(s): 629992	Pentacosane	126	%Rec	
*400009	TPH-GC/Diesel Range Organics	103	%Rec	

08204465 Matrix Spike

BREMERTON-010930

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 52 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/12/08 17:40:00
Matrix: Solid
Sample Number: 08204465
Type: Matrix Spike Dupl

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Surrogate(s)	629992 Pentacosane	124	%Rec	
	*400009 TPH-GC/Diesel Range Organics	107	%Rec	

08204465 Matrix Spike Du

BREMERTON-010931

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB35

Collected: 5/13/08 11:00:00
Matrix: Solid
Sample Number: 08204466
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/22/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/16/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	66	%Rec	

08204466 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 54 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP04SB40

Collected: 5/13/08 11:25:00
Matrix: Solid
Sample Number: 08204467
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/22/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/16/2008		
Analytes(s): *400009		TPH-GC/Diesel Range Organics	25	mg/kg U
*400010		TPH-GC/Motor Oil Range Organic s	50	mg/kg U
Surrogate(s): 629992		Pentacosane	83	%Rec

08204467 Reg sample

BREMERTON-010933

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 55 of 103

Project Code:	TEC-916A	Collected:	5/14/08	10:00:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08204468	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	MP01SB35			

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/22/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/16/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	72	%Rec	

08204468 Reg sample

BREMERTON-010934

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 56 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: ID01WT

Collected: 5/19/08 12:40:00
Matrix: Liquid
Sample Number: 08214400
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : A4		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/20/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	0.37	mg/L	J
	*400010 TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s):	629992 Pentacosane	104	%Rec	

08214400 Reg sample

BREMERTON-010935

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code:	TEC-916A	Collected:	5/19/08	11:15:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08214409	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	MP02SB05			

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	18	mg/kg	
Surrogate(s):	629992 Pentacosane	121	%Rec	

08214409 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP02SB10

Collected: 5/19/08 11:25:00
Matrix: Solid
Sample Number: 08214410
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	115	%Rec	

08214410 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code:	TEC-916A	Collected:	5/19/08	11:35:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08214411	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	MP02SB15			

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	114	%Rec	

08214411 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP02SB20

Collected: 5/19/08 11:45:00
Matrix: Solid
Sample Number: 08214412
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : N1		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/29/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/21/2008		
Analytes(s): *400009 TPH-GC/Diesel Range Organics		25	mg/kg	U
*400010 TPH-GC/Motor Oil Range Organic s		50	mg/kg	U
Surrogate(s : 629992 Pentacosane		120	%Rec	

08214412 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 61 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/19/08 11:45:00
Matrix: Solid
Sample Number: 08214412
Type: Matrix Spike

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/23/2008		
Surrogate(s): 629992	Pentacosane	117	%Rec	
*400009	TPH-GC/Diesel Range Organics	89	%Rec	

08214412 Matrix Spike

BREMERTON-010940

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 62 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/19/08 11:45:00
Matrix: Solid
Sample Number: 08214412
Type: Matrix Spike Dupl

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/29/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/23/2008
Surrogate(s)	629992 Pentacosane	121	%Rec	
	*400009 TPH-GC/Diesel Range Organics	90	%Rec	

08214412 Matrix Spike Du

BREMERTON-010941

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code:	TEC-916A	Collected:	5/19/08	11:50:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08214413	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	MP02SB25			

		Result	Units	Qlfr	
GC					
Parameter	: Tot Petroleum Hyd, Diesel extended		Container ID : N1		
Method	: NWTPH-DX	Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608	Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010	TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992	Pentacosane	116	%Rec	

08214413 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP02SB30

Collected: 5/19/08 12:05:00
Matrix: Solid
Sample Number: 08214414
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	122	%Rec	

08214414 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 65 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP03GW

Collected: 5/19/08 10:30:00
Matrix: Liquid
Sample Number: 08214415
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : A4		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/29/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/20/2008		
Analytes(s): *400009		TPH-GC/Diesel Range Organics	0.17	mg/L
*400010		TPH-GC/Motor Oil Range Organic s	0.16	mg/L
Surrogate(s): 629992		Pentacosane	116	%Rec

08214415 Reg sample

BREMERTON-010944

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 66 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP03SB05

Collected: 5/19/08 8:15:00
Matrix: Solid
Sample Number: 08214416
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	118	%Rec	

08214416 Reg sample

BREMERTON-010945

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 67 of 103

Project Code:	TEC-916A	Collected:	5/19/08	8:30:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08214417	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	MP03SB10			

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/29/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/21/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	119	%Rec	

08214417 Reg sample

BREMERTON-010946

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 68 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/19/08 8:30:00
Matrix: Solid
Sample Number: 08214417
Type: Matrix Spike

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/23/2008		
Surrogate(s)	629992 Pentacosane	114	%Rec	
	*400009 TPH-GC/Diesel Range Organics	84	%Rec	

08214417 Matrix Spike

BREMERTON-010947

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 69 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 5/19/08 8:30:00
Matrix: Solid
Sample Number: 08214417
Type: Matrix Spike Dupl

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/23/2008		
Surrogate(s): 629992	Pentacosane	120	%Rec	
*400009	TPH-GC/Diesel Range Organics	96	%Rec	

08214417 Matrix Spike Du

BREMERTON-010948

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 70 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: MP03SB20

Collected: 5/19/08 9:00:00
Matrix: Solid
Sample Number: 08214419
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/21/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	116	%Rec	

08214419 Reg sample

BREMERTON-010949

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 71 of 103

Project Code:	TEC-916A	Collected:	5/19/08	12:20:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08214469	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	ID01SB			

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/30/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/23/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	12	mg/kg	
Surrogate(s):	629992 Pentacosane	132	%Rec	

08214469 Reg sample

BREMERTON-010950

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 72 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: WN01SD

Collected: 6/4/08 15:24:00
Matrix: Solid
Sample Number: 08234458
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWT PH-DX Diesel range organics			Analysis Date : 6/6/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 6/5/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	210	mg/kg	J
	*400010 TPH-GC/Motor Oil Range Organic s	450	mg/kg	J
Surrogate(s):	629992 Pentacosane	117	%Rec	

08234458 Reg sample

BREMERTON-010951

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 73 of 103

Project Code:	TEC-916A	Collected:	6/4/08	15:24:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08234458	
Account Code:	0809BT10P402D43CG000LA00	Type:	Duplicate	
Station Description:				

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 6/6/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 6/5/2008
Analytes(s): *400009	TPH-GC/Diesel Range Organics	280	mg/kg	J
*400010	TPH-GC/Motor Oil Range Organic s	580	mg/kg	J
Surrogate(s): 629992	Pentacosane	118	%Rec	

08234458 Duplicate

BREMERTON-010952

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 74 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected: 6/4/08 15:24:00
Matrix: Solid
Sample Number: 08234458
Type: Matrix Spike

	Result	Units	Qlfr
GC			
Parameter : Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method : NWTPH-DX Diesel range organics			Analysis Date : 6/6/2008
Prep Method : 3540/608 Soxhlet extraction			Prep Date : 6/5/2008
Analytes(s): *400009 TPH-GC/Diesel Range Organics			NA
Surrogate(s): 629992 Pentacosane	122	%Rec	

08234458 Matrix Spike

BREMERTON-010953

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 75 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: WN02SD

Collected: 6/4/08 13:50:00
Matrix: Solid
Sample Number: 08234459
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 6/6/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 6/5/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	140	mg/kg	J
	*400010 TPH-GC/Motor Oil Range Organic s	460	mg/kg	J
Surrogate(s):	629992 Pentacosane	118	%Rec	

08234459 Reg sample

BREMERTON-010954

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: WN03SD

Collected: 6/4/08 14:08:00
Matrix: Solid
Sample Number: 08234460
Type: Reg sample

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 6/6/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 6/5/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	240	mg/kg	J
	*400010 TPH-GC/Motor Oil Range Organic s	620	mg/kg	J
Surrogate(s):	629992 Pentacosane	118	%Rec	

08234460 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 77 of 103

Project Code:	TEC-916A	Collected:	6/4/08	14:08:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08234460	
Account Code:	0809BT10P402D43CG000LA00	Type:	Duplicate	
Station Description:				

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 6/6/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 6/5/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	200	mg/kg	J
	*400010 TPH-GC/Motor Oil Range Organic s	610	mg/kg	J
Surrogate(s):	629992 Pentacosane	114	%Rec	

08234460 Duplicate

BREMERTON-010956

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description: WN04SD

Collected: 6/4/08 14:31:00
Matrix: Solid
Sample Number: 08234461
Type: Reg sample

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : N1		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 6/6/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 6/5/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	63	mg/kg	J
	*400010 TPH-GC/Motor Oil Range Organic s	210	mg/kg	J
Surrogate(s):	629992 Pentacosane	120	%Rec	

08234461 Reg sample

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 79 of 103

Project Code:	TEC-916A	Collected:	6/4/08	14:55:00
Project Name:	BREMERTON GASWORKS	Matrix:	Solid	
Project Officer:	JOANNE LABAW	Sample Number:	08234462	
Account Code:	0809BT10P402D43CG000LA00	Type:	Reg sample	
Station Description:	WN05SD			

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 6/6/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 6/5/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	21	mg/kg	JQ
Surrogate(s):	629992 Pentacosane	106	%Rec	

08234462 Reg sample

BREMERTON-010958

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8135B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : 0
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/19/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/14/2008
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	U
Surrogate(s):	629992 Pentacosane	113	%Rec	

OBS8135B1 Blank

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 81 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8135F1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/19/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/14/2008		
Surrogate(s) : 629992	Pentacosane	126	%Rec	
*400009	TPH-GC/Diesel Range Organics	94	%Rec	

OBS8135F1 LCS

BREMERTON-010960

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8135F2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/19/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/14/2008		
Surrogate(s): 629992	Pentacosane	115	%Rec	
*400009	TPH-GC/Diesel Range Organics	97	%Rec	

OBS8135F2 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8136B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	
Surrogate(s):	629992 Pentacosane	102	%Rec	

OBS8136B1 Blank

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 84 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8136F1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Surrogate(s) : 629992	Pentacosane	89	%Rec	
*400009	TPH-GC/Diesel Range Organics	93	%Rec	

OBS8136F1 LCS

BREMERTON-010963

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 85 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8136F3
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/20/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/15/2008		
Surrogate(s): 629992	Pentacosane	98	%Rec	
*400009	TPH-GC/Diesel Range Organics	102	%Rec	

OBS8136F3 LCSD

BREMERTON-010964

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8137B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : 0
Method	: NWTPH-DX	Diesel range organics		Analysis Date : 5/22/2008
Prep Method	: 3540/608	Soxhlet extraction		Prep Date : 5/16/2008
Analytes(s): *400009		TPH-GC/Diesel Range Organics	25	mg/kg
*400010		TPH-GC/Motor Oil Range Organic s	50	mg/kg
Surrogate(s): 629992		Pentacosane	79	%Rec
				U

OBS8137B1 Blank

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 87 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8137F1
Type: LCS

		Result	Units	Olfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : 0		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/22/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/16/2008		
Surrogate(s): 629992	Pentacosane	73	%Rec	
*400009	TPH-GC/Diesel Range Organics	85	%Rec	

OBS8137F1 LCS

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 88 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8137F2
Type: LCSD

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/22/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/16/2008		
Surrogate(s) : 629992	Pentacosane	78	%Rec	
*400009	TPH-GC/Diesel Range Organics	99	%Rec	

OBS8137F2 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8142B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : 0		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/29/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/21/2008		
Analytes(s): *400009 TPH-GC/Diesel Range Organics		25	mg/kg	U
*400010 TPH-GC/Motor Oil Range Organic s		50	mg/kg	
Surrogate(s): 629992 Pentacosane		116	%Rec	

OBS8142B1 Blank

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 90 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8142F1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : 0
Method	: NWT PH-DX Diesel range organics			Analysis Date : 5/29/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/21/2008
Surrogate(s)	629992 Pentacosane	118	%Rec	
	*400009 TPH-GC/Diesel Range Organics	99	%Rec	

OBS8142F1 LCS

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 91 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8142F2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : 0		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/29/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/21/2008		
Surrogate(s): 629992	Pentacosane	115	%Rec	
*400009	TPH-GC/Diesel Range Organics	93	%Rec	

OBS8142F2 LCSD

BREMERTON-010970

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8144B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/23/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	25	mg/kg	U
	*400010 TPH-GC/Motor Oil Range Organic s	50	mg/kg	
Surrogate(s):	629992 Pentacosane	117	%Rec	

OBS8144B1 Blank

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 93 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8144F1
Type: LCS

		Result	Units	Olfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : 0		
Method : NWTPH-DX Diesel range organics		Analysis Date : 5/29/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/23/2008		
Surrogate(s): 629992	Pentacosane	113	%Rec	
*400009	TPH-GC/Diesel Range Organics	81	%Rec	

OBS8144F1 LCS

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 94 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8144F2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/29/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/23/2008		
Surrogate(s)	629992 Pentacosane	114	%Rec	
	*400009 TPH-GC/Diesel Range Organics	93	%Rec	

OBS8144F2 LCSD

BREMERTON-010973

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8157B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : 0		
Method : NWTPH-DX Diesel range organics		Analysis Date : 6/6/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 5/14/2008		
Analytes(s): *400009 TPH-GC/Diesel Range Organics		25	mg/kg	U
*400010 TPH-GC/Motor Oil Range Organic s		50	mg/kg	U
Surrogate(s): 629992 Pentacosane		113	%Rec	

OBS8157B1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8157F1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : N1
Method	: NWTPH-DX Diesel range organics			Analysis Date : 6/6/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 6/5/2008
Surrogate(s)	629992 Pentacosane	118	%Rec	
	*400009 TPH-GC/Diesel Range Organics	94	%Rec	

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 97 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: OBS8157F2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter : Tot Petroleum Hyd, Diesel extended		Container ID : 0		
Method : NWTPH-DX Diesel range organics		Analysis Date : 6/6/2008		
Prep Method : 3540/608 Soxhlet extraction		Prep Date : 6/5/2008		
Surrogate(s): 629992	Pentacosane	110	%Rec	
*400009	TPH-GC/Diesel Range Organics	91	%Rec	

OBS8157F2 LCSD

BREMERTON-010976

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8140B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/19/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	0.25	mg/L	U
	*400010 TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s):	629992 Pentacosane	90	%Rec	

OBW8140B1 Blank

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8140F1
Type: LCS

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/19/2008		
Surrogate(s) :	629992 Pentacosane	93	%Rec	
	*400009 TPH-GC/Diesel Range Organics	88	%Rec	

OBW8140F1 LCS

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 100 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8140F2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/19/2008		
Surrogate(s)	629992 Pentacosane	95	%Rec	
	*400009 TPH-GC/Diesel Range Organics	79	%Rec	

OBW8140F2 LCSD

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8141B1
Type: Blank

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/20/2008		
Analytes(s):	*400009 TPH-GC/Diesel Range Organics	0.25	mg/L	U
	*400010 TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s):	629992 Pentacosane	98	%Rec	

OBW8141B1 Blank

6/27/08

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Page 102 of 103

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8141F1
Type: LCS

		Result	Units	Olfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended			Container ID : 0
Method	: NWTPH-DX Diesel range organics			Analysis Date : 5/21/2008
Prep Method	: 3540/608 Soxhlet extraction			Prep Date : 5/20/2008
Surrogate(s)	629992 Pentacosane	84	%Rec	
	*400009 TPH-GC/Diesel Range Organics	66	%Rec	

OBW8141F1 LCS

BREMERTON-010981

Manchester Environmental Laboratory
Report by Parameter for Project TEC-916A

Project Code: TEC-916A
Project Name: BREMERTON GASWORKS
Project Officer: JOANNE LABAW
Account Code: 0809BT10P402D43CG000LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: OBW8141F2
Type: LCSD

		Result	Units	Qlfr
GC				
Parameter	: Tot Petroleum Hyd, Diesel extended	Container ID : 0		
Method	: NWTPH-DX Diesel range organics	Analysis Date : 5/21/2008		
Prep Method	: 3540/608 Soxhlet extraction	Prep Date : 5/20/2008		
Surrogate(s): 629992	Pentacosane	104	%Rec	
*400009	TPH-GC/Diesel Range Organics	91	%Rec	

OBW8141F2 LCSD



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720 Third Avenue, Suite 1700, Seattle, WA 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: June 23, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Inorganic Data Summary Check,
Bremerton Gasworks Properties, Bremerton, Washington**

REF: TDD: 07-01-0008

PAN: 002233.0178.01BR

The data summary check of 10 soil samples collected from the Bremerton Gasworks Properties site located in Bremerton, Washington, has been completed. Analysis for Total Arsenic (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The samples were numbered:

MJ8K30	MJ8K31	MJ8K32	MJ8K33	MJ8K34
MJ8K35	MJ8K37	MJ8K38	MJ8K40	MJ8K86

A cursory assessment of the data was provided.

11/15

KM ✓ DB 10/16



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

June 17, 2008

Reply To
Attn. Of: OEA-095

MEMORANDUM

SUBJECT: Data Transmittal for Bremerton Gasworks TBA,
Case# 37435, SDG: MJ8K31, Inorganic Analysis

FROM: Donald Matheny, Chemist *DM*
Environmental Services Unit, OEA

TO: Joanne LaBaw, Project Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, Ecology & Environment

The following data are being transmitted for the above project. Ten (10) soil samples were analyzed for total arsenic by Bonner Analytical, Hattiesburg, MS. Sample numbers for this delivery group are:

MJ8K30	MJ8K31	MJ8K32	MJ8K33	MJ8K34
MJ8K35	MJ8K37	MJ8K38	MJ8K40	MJ8K86

A cursory assessment of the data indicates the following:

Matrix spike and duplicate analyses were compliant. The arsenic concentration in the serial dilution sample was too low to evaluate (<50 x IDL).

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K30

Lab Name: Bonner Analytical TestingContract: EPW06055Lab Code: BONNER Case No.: 37435NRAS No.: 1559.0SDG No.: MJ8K31Matrix: (Soil/Water) SOILLab Sample ID: 0805064-01Level: (low/med) LOWDate Received: 05/21/2008% Solids 90.6

Concentration Units (ug/L or mg/kg dry weight):

mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.2			P

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K31

Lab Name: Bonner Analytical TestingContract: EPW06055Lab Code: BONNER Case No.: 37435NRAS No.: 1559.0SDG No.: MJ8K31Matrix: (Soil/Water) SOILLab Sample ID: 0805064-02Level: (low/med) LOWDate Received: 05/21/2008% Solids 90.9Concentration Units (ug/L or mg/kg dry weight):mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.82			P

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K32

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: 1559.0 SDG No.: MJ8K31
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805064-03
Level: (low/med) LOW Date Received: 05/21/2008
% Solids 94.2

Concentration Units (ug/L or mg/kg dry weight):

			mg/Kg		
CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.49			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: _____ Artifacts: _____
Comments: _____

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K33

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: 1559.0 SDG No.: MJ8K31
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805064-04
Level: (low/med) LOW Date Received: 05/21/2008
% Solids 88.9

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.50			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K34

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: 1559.0 SDG No.: MJ8K31
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805064-05
Level: (low/med) LOW Date Received: 05/21/2008
% Solids 93.4

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.77			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: _____ Artifacts: _____
Comments:

FORM 1A-IN

ILM05.4

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K35

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: 1559.0 SDG No.: MJ8K31
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805064-06
Level: (low/med) LOW Date Received: 05/21/2008
% Solids 93.8

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.68			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K38

Lab Name: Bonner Analytical TestingContract: EPW06055Lab Code: BONNER Case No.: 37435NRAS No.: 1559.0SDG No.: MJ8K31Matrix: (Soil/Water) SOILLab Sample ID: 0805064-08Level: (low/med) LOWDate Received: 05/21/2008% Solids 92.0

Concentration Units (ug/L or mg/kg dry weight):

mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.86			P

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K40

Lab Name: Bonner Analytical TestingContract: EPW06055Lab Code: BONNER Case No.: 37435NRAS No.: 1559.0SDG No.: MJ8K31Matrix: (Soil/Water) SOILLab Sample ID: 0805064-09Level: (low/med) LOWDate Received: 05/21/2008% Solids 84.7Concentration Units (ug/L or mg/kg dry weight):mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.97			P

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

FORM 1A-IN

ILM05.4

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K86

Lab Name: Bonner Analytical TestingContract: EPW06055Lab Code: BONNER Case No.: 37435NRAS No.: 1559.0SDG No.: MJ8K31Matrix: (Soil/Water) SOILLab Sample ID: 0805064-10Level: (low/med) LOWDate Received: 05/21/2008% Solids 88.2Concentration Units (ug/L or mg/kg dry weight):mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.92			P

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:



ecology and environment, inc.

International Specialists in the Environment

720 Third Avenue, Suite 1700, Seattle, WA 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: June 23, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Inorganic Data Summary Check,
Bremerton Gasworks Properties, Bremerton, Washington**

REF: TDD: 07-01-0008 PAN: 002233.0178.01BR

The data summary check of 13 soil samples collected from the Bremerton Gasworks Properties site located in Bremerton, Washington, has been completed. Analysis for total arsenic (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The samples were numbered:

MJ8K66	MJ8K68	MJ8K69	MJ8K70	MJ8K71
MJ8K72	MJ8K73	MJ8K79	MJ8K80	MJ8K81
MJ8K82	MJ8K83	MJ8K84		

A cursory assessment of the data was provided with no qualifiers added. The secondary reviewer added the listed validation qualifiers.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

June 17, 2008

Reply To
Attn. Of: OEA-095

MEMORANDUM

SUBJECT: Data Transmittal for Bremerton Gasworks TBA,
Case# 37435, SDG: MJ8K68, Inorganic Analysis

FROM: Donald Matheny, Chemist *DM*
Environmental Services Unit, OEA

TO: Joanne LaBaw, Project Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, Ecology & Environment

The following data are being transmitted for the above project. Thirteen (13) soil samples were analyzed for total arsenic by Bonner Analytical, Hattiesburg, MS. Sample numbers for this delivery group are:

MJ8K66	MJ8K68	MJ8K69	MJ8K70	MJ8K71	MJ8K72	MJ8K73
MJ8K79	MJ8K80	MJ8K81	MJ8K82	MJ8K83	MJ8K84	

A cursory assessment of the data indicates the following: Matrix spike and duplicate analyses were compliant. The arsenic concentration in the serial dilution sample was too low to evaluate (<50 x IDL).

19

km 100
10/16

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K66

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-01
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 82.4

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.28			P

Color Before: BROWN Clarity Before: _____ Texture: COARSE
Color After: BROWN Clarity After: _____ Artifacts: _____
Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K68

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-02
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 82.9

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.17			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K69

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-03
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 61.7

Concentration Units (ug/L or mg/kg dry weight):

mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.85			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: BROWN Clarity After: _____ Artifacts: _____
Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K70

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-04
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 99.8

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.87			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: BROWN Clarity After: _____ Artifacts: _____
Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K71

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-05
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 79.8

Concentration Units (ug/L or mg/kg dry weight):

mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.89			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: BROWN Clarity After: _____ Artifacts: _____
Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K72

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-06
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 78.5

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.47			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: BROWN Clarity After: _____ Artifacts: _____

Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K73

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-07
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 77.9

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.53			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: BROWN Clarity After: _____ Artifacts: _____
Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K79

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-08
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 76.0

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.57			P

Color Before: BROWN Clarity Before: Texture: MEDIUM
Color After: BROWN Clarity After: Artifacts:
Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K80

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-09
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 80.3

Concentration Units (ug/L or mg/kg dry weight):

mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.21			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: BROWN Clarity After: _____ Artifacts: _____
Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ8K81

Lab Name: Bonner Analytical Testing Contract: EPW06055
Lab Code: BONNER Case No.: 37435 NRAS No.: _____ SDG No.: MJ8K68
Matrix: (Soil/Water) SOIL Lab Sample ID: 0805050-10
Level: (low/med) LOW Date Received: 05/17/2008
% Solids 84.2

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS NO.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.62			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: BROWN Clarity After: _____ Artifacts: _____
Comments: _____

